

=> FILE REG

FILE 'REGISTRY' ENTERED ON 27 APR 2007

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=> D HIS

FILE 'LREGISTRY'
L1 STR

FILE 'REGISTRY'
L2 0 S L1
L3 SCR 1404 AND 1707
L4 0 S L1 AND L3

FILE 'LREGISTRY'
L5 STR L1

FILE 'REGISTRY'
L6 50 S L5 AND L3
L7 SCR 1838
L8 50 S L5 AND L3 NOT L7
L9 2445 S L5 AND L3 NOT L7 FUL
SAV L9 WEI268/A
L10 2 S L1 SSS SAM SUB=L9
L11 45 S L1 SSS FUL SUB=L9
SAV L11 WEI268A/A

FILE 'HCA'
L13 588 S L11

FILE 'REGISTRY'
L14 1 S 110-67-8
L15 44 S L11 NOT L14

FILE 'HCA'
L16 237 S L15
L17 480980 S ELECTROLY?
L18 235743 S (BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY? OR
L19 QUE ?CARBONAT?
E ETHERS/CV
L20 40651 S E3
E ESTERS/CV
L21 52872 S E3

L22 12 S L16 AND (L17 OR L18)
L23 101 S L13 AND (L17 OR L18)
L24 32 S L23 AND (L19 OR L20 OR L21)

FILE 'HCAPLUS'

L25 6771 S SUN L?/AU
L26 48593 S BATTERY/TI
L27 8 S L25 AND L26
SEL L27 2 RN

FILE 'REGISTRY'

L28 27 S E1-E27
L29 10 S L28 AND LI/ELS
L30 6 S L29 NOT TIS/CI

FILE 'HCA'

L31 18933 S L30
L32 2 S L11 AND L28

FILE 'HCA'

L33 530 S L32

FILE 'REGISTRY'

L34 6 S L28 AND ?CARBONAT?/CNS
L35 2 S L34 AND RSD/FA

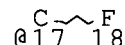
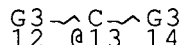
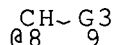
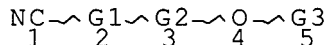
FILE 'HCA'

L36 16658 S L35
L37 42 S L36 AND L33
L38 29 S L37 AND (L17 OR L18)
L39 19 S 1840-2003/PRY,PY AND L38
L40 101 S L13 AND (L17 OR L18)
L41 32 S L40 AND (L19 OR L20 OR L21)
L42 19 S L40 AND L31
L43 12 S L41 AND L42
L44 5 S L22 AND L43
L45 12 S L22 OR L44
L46 14 S (L42 OR L43) NOT L45
L47 19 S L41 NOT (L45 OR L46)
L48 10 S 1840-2003/PRY,PY AND L45
L49 7 S 1840-2003/PRY,PY AND L46
L50 11 S 1840-2003/PRY,PY AND L47

FILE 'REGISTRY'

=> D L11 QUE STAT

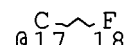
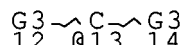
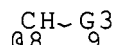
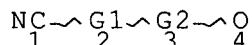
L1 STR



VAR G1=CH2/8/13
REP G2=(1-2) CH2
VAR G3=ME/ET/N-PR/I-PR/17
NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 12

STEREO ATTRIBUTES: NONE
L3 SCR 1404 AND 1707
L5 STR



VAR G1=CH2/8/13
REP G2=(0-2) CH2
VAR G3=ME/ET/N-PR/I-PR/17
NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 11

STEREO ATTRIBUTES: NONE
L7 SCR 1838
L9 2445 SEA FILE=REGISTRY SSS FUL L5 AND L3 NOT L7
L11 45 SEA FILE=REGISTRY SUB=L9 SSS FUL L1

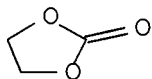
100.0% PROCESSED 2445 ITERATIONS
SEARCH TIME: 00.00.01

45 ANSWERS

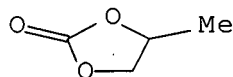
=> FILE HCA
FILE 'HCA' ENTERED ON 27 APR 2007
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=> D L39 1-19 CBIB ABS HITSTR HITIND

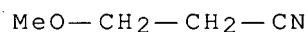
L39 ANSWER 1 OF 19 HCA COPYRIGHT 2007 ACS on STN
143:29529 Nonaqueous **electrolytes** having an extended
temperature range for **battery** applications. Sun, Luying
(USA). U.S. Pat. Appl. Publ. US 2005123835 A1 20050609, 17 pp.
(English). CODEN: USXXCO. APPLICATION: US 2003-731268 20031209.
AB The present invention discloses non-aq. **electrolytes** having an
extended temp. range for **battery** applications. The **electrolyte**
comprises an **electrolyte** salt, e.g., LiPF₆, a first non-aq. solvent,
and a second non-aq. solvent. The **electrolyte** of the present
invention has higher ionic cond., lower f.p., and lower vapor
pressure at high temp. than com. **electrolytes**. These non-aq.
electrolytes can be used, for example, in lithium-ion **batteries**.
Methods of making lithium-ion **batteries** are also described.
IT **96-49-1**, Ethylene carbonate **108-32-7**, Propylene
carbonate **110-67-8**, 3-Methoxypropionitrile
2141-62-0, 3-Ethoxypropionitrile
(nonaq. **electrolytes** having extended temp. range for
battery applications)
RN **96-49-1** HCA
CN 1,3-Dioxolan-2-one (CA INDEX NAME)



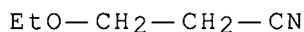
RN **108-32-7** HCA
CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



RN 2141-62-0 HCA
CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)



IC ICM H01M010-40
ICS H01M004-52; H01M004-50; H01M004-58
INCL 429326000; 429330000; 429339000; 429231300; 429231100; 429223000;
429221000; 429224000; 429231800
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72, 76
ST **battery** nonaq **electrolyte** extended temp range
IT Electrochromic devices
Sensors
(**electrolyte**; nonaq. **electrolytes** having
extended temp. range for **battery** applications)
IT Secondary **batteries**
(lithium; nonaq. **electrolytes** having extended temp.
range for **battery** applications)
IT **Battery electrolytes**
Electrolytic capacitors
Fuel cell **electrolytes**
Ionic conductivity
(nonaq. **electrolytes** having extended temp. range for
battery applications)
IT Carbonaceous materials (technological products)
Coke
Esters, uses
Ethers, uses
(nonaq. **electrolytes** having extended temp. range for
battery applications)
IT Sulfonic acids, uses
(perfluoro, lithium salt; nonaq. **electrolytes** having

extended temp. range for **battery** applications)

IT Perfluoro compounds
(sulfonic acids, lithium salt; nonaq. **electrolytes**
having extended temp. range for **battery** applications)

IT **96-49-1**, Ethylene carbonate 105-58-8, Diethyl carbonate
108-32-7, Propylene carbonate **110-67-8**,
3-Methoxypropionitrile 463-79-6D, Carbonic acid, ester, cyclic
463-79-6D, Carbonic acid, ester, linear 616-38-6, Dimethyl
carbonate 623-53-0, Ethyl methyl carbonate 1001-55-4,
2-Acetoxyacetone nitrile 1656-48-0 1738-36-9, Methoxyacetone nitrile
2141-62-0, 3-Ethoxypropionitrile 7782-42-5, Graphite, uses
7791-03-9, Lithium perchlorate 12031-65-1, Lithium nickel oxide
(LiNiO₂) 12057-17-9, Lithium manganese oxide (LiMn₂O₄)
12190-79-3, Cobalt lithium oxide (CoLiO₂) 14283-07-9, Lithium
tetrafluoroborate 15365-14-7, Iron lithium phosphate felipo₄
18804-04-1, uses 21324-40-3, Lithium hexafluorophosphate
29935-35-1, Lithium hexafluoroarsenate 56756-91-3 62957-60-2,
Ethoxyacetone nitrile 90076-65-6 260362-83-2 311346-25-5, Cobalt
lithium nickel oxide (Co_{0.1}-0.9LiNi_{0.1}-0.9O₂) 852995-04-1
(nonaq. **electrolytes** having extended temp. range for
battery applications)

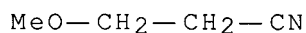
L39 ANSWER 2 OF 19 HCA COPYRIGHT 2007 ACS on STN

140:294908 An improved electrochromic or electrodeposition display and
novel process for their manufacture. Liang, Rong-chang; Hou, Jack;
Ananthavel, Sundaravel P. (Sipix Imaging, Inc., USA). PCT Int.
Appl. WO 2004025356 A2 20040325, 37 pp. DESIGNATED STATES: W: AE,
AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR,
CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR,
HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU,
LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT,
RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG,
UZ, VC, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM,
CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL,
PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO
2003-US28540 20030910. PRIORITY: US 2002-409833P 20020910.

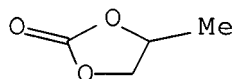
AB An electrochromic or electrodeposition display is described
comprising a plurality of cells enclosed between the two electrodes,
each of the cells comprising (i) surrounding partition walls
(microcup) , (ii) an electrochromic fluid or **electrolytic** fluid
(e.g., silver nitrate in a polymer matrix) filled therein, and (iii)
a polymeric sealing layer which encloses the electrochromic fluid or
electrolytic fluid within each cell and sealingly adheres to the
surface of the partition walls. The display device may also have a
top electrode plate and a bottom electrode plate, at least one of
which is transparent. A method of prepg. an electrochromic or
electrodeposition display is also described entailing (a) embossing a

thermoplastic or thermoset precursor layer with a pre-patterned male mold; (b) hardening the thermoplastics or thermoset precursor layer; (c) releasing the mold from the thermoplastic or thermoset precursor layer; (d) filling the thus-formed array of microcups with an electrochromic or electrodeposition fluid; and (e) sealing the filled microcups.

IT **110-67-8**, 3-Methoxypropionitrile.
(electrochromic solvent; electrochromic or electrodeposition display and fabrication method)
RN 110-67-8 HCA
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IT **108-32-7**, Propylene carbonate
(non-aq. solvent; electrochromic or electrodeposition display and fabrication method)
RN 108-32-7 HCA
CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



IC ICM G02F001-00
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 72, 76
IT Gelatins, uses
Polyoxyalkylenes, uses
(**electrolytic** fluid; electrochromic or electrodeposition display and fabrication method)
IT **110-67-8**, 3-Methoxypropionitrile.
(electrochromic solvent; electrochromic or electrodeposition display and fabrication method)
IT 7791-03-9, Lithium perchlorate 33454-82-9, Lithium triflate
35895-70-6, Tetrabutylammonium triflate
(**electrolyte**; electrochromic or electrodeposition display and fabrication method)
IT 7761-88-8, Silver nitrate, uses 9000-01-5, Gum Arabic 9003-39-8,
Polyvinylpyrrolidone 9004-62-0, Hydroxyethyl cellulose

9004-64-2, Hydroxypropyl cellulose 9004-67-5, Methyl cellulose
25322-68-3, Poly(ethylene oxide)

(**electrolytic** fluid; electrochromic or
electrodeposition display and fabrication method)

IT 67-68-5, Dimethylsulfoxide, uses 68-12-2, Dimethyl formamide, uses
75-05-8, Acetonitrile, uses 96-48-0, γ -Butyrolactone
108-32-7, Propylene carbonate 109-86-4, 2-Methoxyethanol
109-87-5, Dimethoxymethane 110-80-5, 2-Ethoxyethanol 127-19-5,
N, N-Dimethylacetamide 617-84-5, Diethyl formamide 872-50-4,
N-Methylpyrrolidone, uses 1187-58-2, N-Methylpropionic acid amide
4553-62-2, 2-Methylglutaronitrile
(non-aq. solvent; electrochromic or electrodeposition display and
fabrication method)

L39 ANSWER 3 OF 19 HCA COPYRIGHT 2007 ACS on STN

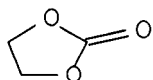
139:373188 **Electrolytic** solutions with high specific
electroconductivity for double-layer electric capacitors.
Kobayashi, Yukiya; Seike, Hideo; Takamuku, Yoshinori (Sanyo Chemical
Industries, Ltd., Japan; Matsushita Electric Industrial Co., Ltd.).
Jpn. Kokai Tokkyo Koho JP 2003324039 A **20031114**, 8 pp.
(Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-48795 20030226.
PRIORITY: JP 2002-50174 20020226.

AB The **electrolytic** solns. comprise (A) **electrolytes** contg. amidinium
cations $R_2N^+C(R_1):NR_2$ or $[(R_4)_2N]_2CR_3^+$ [R_1, R_3 = (substituted) C1-20
hydrocarbyl, H; R_2, R_4 = (substituted) C1-10 hydrocarbyl; R_1 and R_2
or R_3 and R_4 may link together to form a heterocyclic ring with N]
and anions and (B) nonaq. solvents with viscosity at 25° 0.1-1.3 mPa-
s. The double-layer elec. capacitors have polarizable electrodes
impregnated with the **electrolytic** solns., wherein cathodes or anodes
contain carbonaceous materials as main components. The double-layer
elec. capacitors show low equiv. series resistance.

IT **96-49-1**, Ethylene carbonate **108-32-7**, Propylene
carbonate **110-67-8**, 3-Methoxypropionitrile
(**electrolyte** solvent; **electrolytic** solns.
contg. amidinium cations with high specific electrocond. for
double-layer elec. capacitors)

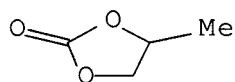
RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



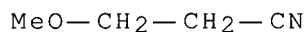
RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IC ICM H01G009-038

ICS H01G009-035; H01G009-058; H01G009-14

CC 76-10 (Electric Phenomena)

ST **electrolyte** double layer elec capacitor amidinium cation

IT Capacitors

(double layer; **electrolytic** solns. contg. amidinium cations with high specific electrocond. for double-layer elec. capacitors)

IT Carbonaceous materials (technological products)

(electrodes; **electrolytic** solns. contg. amidinium cations with high specific electrocond. for double-layer elec. capacitors)

IT **Electrolytes**

Electrolytic capacitors

(**electrolytic** solns. contg. amidinium cations with high specific electrocond. for double-layer elec. capacitors)

IT 7440-44-0, Activated carbon, uses

(activated, electrode; **electrolytic** solns. contg. amidinium cations with high specific electrocond. for double-layer elec. capacitors)

IT 68-12-2, N,N-Dimethylformamide, uses 75-05-8, Acetonitrile, uses

75-52-5, Nitromethane, uses 79-24-3, Nitroethane **96-49-1**

, Ethylene carbonate 107-12-0, Propionitrile **108-32-7**,

Propylene carbonate 109-74-0, Butyronitrile **110-67-8**,

3-Methoxypropionitrile 126-33-0, Sulfolan 127-19-5,

N,N-Dimethylacetamide 1738-36-9, Methoxyacetonitrile

(**electrolyte** solvent; **electrolytic** solns.

contg. amidinium cations with high specific electrocond. for double-layer elec. capacitors)

IT 137581-28-3, 1,2,3-Trimethyl-1,4,5,6-tetrahydropyrimidinium

hexafluorophosphate 143314-16-3, 1-Ethyl-3-methylimidazolium
tetrafluoroborate 620944-22-1, 1,2,3-Trimethylimidazolium
hexafluorophosphate

(**electrolyte; electrolytic** solns. contg.
amidinium cations with high specific electrocond. for
double-layer elec. capacitors)

L39 ANSWER 4 OF 19 HCA COPYRIGHT 2007 ACS on STN

139:269341 **Electrolyte** solution for use in capacitors,
electrochemical cells, and lithium ion
batteries. Schwake, Andree (Epcos AG, Germany). PCT Int.
Appl. WO 2003081620 A1 **20031002**, 19 pp. DESIGNATED
STATES: W: CN, JP, RU, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR,
GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (German). CODEN: PIXXD2.
APPLICATION: WO 2003-DE815 20030313. PRIORITY: DE 2002-10212609
20020321.

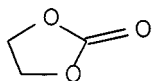
AB The invention relates to an **electrolyte** soln. for **electrochem. cells**
with a high b.p. > 86° at 1 bar and a high degree of cond. > 40 mS/cm
at 25°. The soln. contains MeCN as the 1st solvent, (component A),
in a proportion of 40-90% of the av. wt. of the solvent, in addn. to
≥1 addnl. electrochem. stable solvent with a b.p. > 120° at 1 bar, a
dielec. const. > 10 at 25° and a viscosity < 6 mPa at 25° and addnl.
≥1 support **electrolyte** as component C. Inventive **electrolyte** solns.
of this type have a high degree of cond., which is comparable to
electrolyte solns. that use MeCN as the sole solvent, while at the
same time exhibiting an increased b.p. as a result of component B.

IT **96-49-1**, Ethylene carbonate **108-32-7**, Propylene
carbonate **110-67-8**

(**electrolytic** soln. contg.; **electrolyte** soln.
for use in capacitors, **electrochem. cells**,
and lithium ion **batteries**)

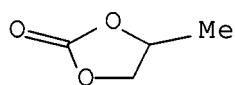
RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)

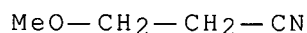


RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA
 CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IC ICM H01G009-038
 ICS H01M010-40
 CC 76-10 (Electric Phenomena)
 Section cross-reference(s): 52, 72
 ST **electrolytic** soln capacitor **electrochem**
cell lithium ion **battery**
 IT Capacitors
 (double layer; **electrolyte** soln. for use in capacitors,
electrochem. cells, and lithium ion
batteries)
 IT **Electrochemical cells**
Electrolytic capacitors
Electrolytic solutions
 (**electrolyte** soln. for use in capacitors,
electrochem. cells, and lithium ion
batteries)
 IT Primary **batteries**
 Secondary **batteries**
 (lithium; **electrolyte** soln. for use in capacitors,
electrochem. cells, and lithium ion
batteries)
 IT 67-68-5, Dimethylsulfoxide, uses 68-12-2, Dimethylformamide, uses
 80-73-9, N,N-Dimethylimidazolidinone 96-48-0, γ-
 Butyrolactone **96-49-1**, Ethylene carbonate 105-58-8,
 Diethyl carbonate 108-29-2, γ-Valerolactone **108-32-7**
 , Propylene carbonate 110-61-2, Succinonitrile **110-67-8**
 126-33-0, Sulfolane 127-19-5, Dimethylacetamide 512-56-1,
 Trimethyl phosphate 544-13-8, Glutaronitrile 623-53-0,
 Ethylmethyl carbonate 661-36-9, Tetramethylammonium
 tetrafluoroborate 872-50-4, uses 872-93-5, 3-Methylsulfolane
 4437-85-8, Butylene carbonate 19836-78-3, 3-Methyl-2-oxazolidinone
 (**electrolytic** soln. contg.; **electrolyte** soln.)

for use in capacitors, **electrochem. cells**,
and lithium ion **batteries**)

L39 ANSWER 5 OF 19 HCA COPYRIGHT 2007 ACS on STN

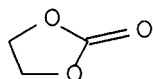
138:139978 Effect of the cell structure elements on performance of dye-sensitized solar cell. Han, Liyuan; Yamanaka, Ryohsuke; Obata, Takatsugu (Technical Main Dept., Sharp Co., Ltd., Japan). Shapu Giho, 83, 49-53 (Japanese) **2002**. CODEN: STEJD9. ISSN: 0285-0362. Publisher: Shapu K.K. Gijutsu Honbu.

AB A TiO₂ porous light electrode, absorption of a dye and compn. of **electrolyte** were investigated for the improvement in energy conversion efficiency of the dye-sensitized solar cell. It is found that increase in the porosity of TiO₂ porous light electrode causes increase in the efficiency because more dye is absorbed on the electrode. Dye uptake increases with absorption temp., when the temp. is over 90°, however, short circuit current (J_{sc}) decreases because of dye aggregation. It is also found that high J_{sc} can be obtained by increasing the ionic cond. of **electrolyte**. Finally, the efficiency of 8% was obtained. It is necessary to develop a new dye with broad absorbance in order to obtain the efficiency as high as silicon solar cell.

IT **96-49-1**, Ethylene carbonate **110-67-8**,
3-Methoxypropionitrile
(effect of cell structure elements on performance of
dye-sensitized solar cell)

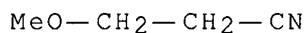
RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76

IT 75-05-8, Acetonitrile, uses **96-49-1**, Ethylene carbonate
110-67-8, 3-Methoxypropionitrile 631-40-3,

Tetrapropylammonium iodide 3978-81-2, 4-tert-Butylpyridine
7553-56-2, Iodine, uses 10377-51-2, Lithium iodide (LiI)
13463-67-7, Titania, uses 19836-78-3, 3-Methyl-2-oxazolidinone
218151-78-1, 1,2-Dimethyl-3-propylimidazolium iodide
(effect of cell structure elements on performance of
dye-sensitized solar cell)

L39 ANSWER 6 OF 19 HCA COPYRIGHT 2007 ACS on STN

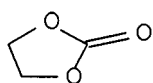
138:82077 Flame-retardant **electrolyte** solution for
electrochemical double-layer capacitors. Schwake, Andree (Epcos AG,
Germany). PCT Int. Appl. WO 2003003393 A1 **20030109**, 29
pp. DESIGNATED STATES: W: AU, BR, CA, CN, CZ, HU, IN, JP, KR, MX,
RU, UA, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT,
LU, MC, NL, PT, SE, TR. (German). CODEN: PIXXD2. APPLICATION: WO
2002-DE1844 20020522. PRIORITY: DE 2001-10128581 20010613.

AB The invention relates to flame-retardant **electrolyte** solns. with
flash points $>76^{\circ}$. The solns. contain ≥ 1 support **electrolyte** which
is dissolved in a solvent mixt. consisting of ≥ 1 highly polar
component and ≥ 1 flame-retardant, low-viscosity carbamate component.
The flame-retardant **electrolyte** solns. are indicated for use in
electrochem. capacitors with conductivities of > 20 mS/cm at 25° .

IT **96-49-1**, Ethylene carbonate **108-32-7**, Propylene
carbonate **110-67-8**, 3-Methoxypropionitrile
(capacitor **electrolyte** contg.; flame-retardant
electrolyte soln. for electrochem. double-layer
capacitors)

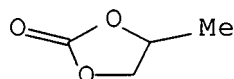
RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



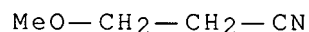
RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



- IC ICM H01G009-00
 - ICS H01G009-02; H01M010-40
- CC 76-10 (Electric Phenomena)
 - Section cross-reference(s): 72
- ST electrochem double layer capacitor flame retardant **electrolyte**
- IT Lactones
 - Nitriles, uses
 - Phosphonium compounds
 - Pyridinium compounds
 - Quaternary ammonium compounds, uses
 - (capacitor **electrolyte** contg.; flame-retardant **electrolyte** soln. for electrochem. double-layer capacitors)
- IT Felts
 - Paper
 - Textiles
 - (capacitor separator; flame-retardant **electrolyte** soln. for electrochem. double-layer capacitors)
- IT Glass fibers, uses
 - Polymers, uses
 - (capacitor separator; flame-retardant **electrolyte** soln. for electrochem. double-layer capacitors)
- IT Capacitors
 - (double layer; flame-retardant **electrolyte** soln. for electrochem. double-layer capacitors)
- IT Capacitor electrodes
 - Electrolytic** capacitors
 - Electrolytic** solutions
 - Fire-resistant materials
 - (flame-retardant **electrolyte** soln. for electrochem. double-layer capacitors)
- IT Onium compounds
 - (imidazolium compds., capacitor **electrolyte** contg.; flame-retardant **electrolyte** soln. for electrochem. double-layer capacitors)
- IT Onium compounds
 - (morpholinium compds., capacitor **electrolyte** contg.; flame-retardant **electrolyte** soln. for electrochem. double-layer capacitors)

- IT Onium compounds
 (pyrrolidinium compds., capacitor **electrolyte** contg.;
 flame-retardant **electrolyte** soln. for electrochem.
 double-layer capacitors)
- IT 75-05-8, Acetonitrile, uses 96-48-0, γ -Butyrolactone
96-49-1, Ethylene carbonate 108-29-2, γ -
 Valerolactone **108-32-7**, Propylene carbonate 110-61-2,
 Succinonitrile **110-67-8**, 3-Methoxypropionitrile
 407-43-2, Carbamic acid, dimethyl-, 2,2,2-trifluoroethyl ester
 429-06-1, Tetraethylammonium tetrafluoroborate 544-13-8,
 Glutaronitrile 687-48-9, Ethyl-N,N-dimethylcarbamate 7541-16-4,
 Methyl-N,N-dimethylcarbamate 69444-47-9, Methyltriethylammonium
 tetrafluoroborate
 (capacitor **electrolyte** contg.; flame-retardant
electrolyte soln. for electrochem. double-layer
 capacitors)
- IT 7429-90-5, Aluminum, uses
 (capacitor separator; flame-retardant **electrolyte** soln.
 for electrochem. double-layer capacitors)

L39 ANSWER 7 OF 19 HCA COPYRIGHT 2007 ACS on STN

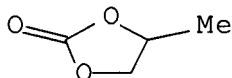
138:46203 Rest potential of activated carbon electrode in various
 organic **electrolytes**. Takeda, Masayuki (Sci. Tech. Res.
 Cent., Mitsubishi Chem. Corp., Japan). Den kai Chikudenki Hyoron,
 53(1), 135-137 (Japanese) **2002**. CODEN: DCHYAK. ISSN:
 0286-5629. Publisher: Den kai Chikudenki Kenkyukai.

AB The rest potential of the activated C electrode, which were measured
 in 14 kinds of org. solvents, such as carbonate, nitriles, lactones,
 DMF, DMSO, etc., ranged from -0.29 V to -0.16 V vs. EFC/Fc, that
 could not be correlate with the structure of solvent mol. The
 relation between the rest potential and the donor no. or the acceptor
 nos. of these solvents are discussed.

IT **108-32-7**, Propylene carbonate **110-67-8**,
 3-Methoxypropionitrile
 (rest potential of activated carbon electrode in)

RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH₂—CH₂—CN

- CC 72-2 (Electrochemistry)
ST rest potential carbon electrode org **electrolyte**; solvent
effect rest potential carbon electrode
IT Electron acceptors
Electron donors
(aprotic solvents; rest potential of activated carbon electrode
in various org. **electrolytes**)
IT Electrodes
(rest potential of activated carbon electrode in various org.
electrolytes)
IT Electric potential
(rest; of activated carbon electrode in various org.
electrolytes)
IT 67-68-5, Dimethyl sulfoxide, uses 68-12-2, DMF, uses 75-05-8,
Acetonitrile, uses 80-73-9, N,N-Dimethylimidazolidinone 96-48-0,
γ-Butyrolactone 108-29-2, γ-Valerolactone
108-32-7, Propylene carbonate **110-67-8**,
3-Methoxypropionitrile 126-33-0, Sulfolane 127-19-5,
N,N-Dimethylacetamide 512-56-1, Trimethyl phosphate 872-50-4,
uses 1738-36-9, Methoxyacetonitrile 59581-66-7
(rest potential of activated carbon electrode in)
IT 7440-44-0, Carbon, uses
(rest potential of activated carbon electrode in various org.
electrolytes)

L39 ANSWER 8 OF 19 HCA COPYRIGHT 2007 ACS on STN

136:378574 Method of manufacturing a electric double layer
supercapacitor with electrode of carbon particle layer. Maletin,
Yurii A.; Strizhakova, Natalie G.; Izotov, Vladimiz Y.; Mironova,
Antonia A.; Kozachkov, Sergey G.; Danilin, Valery A.; Podmogilny,
Sergey N.; Arulepp, Mati; Aleksandrovna, Kukusjkina Julia;
Efimovitj, Kravtjik Aleksandr; Vasilevitj, Sokolov Vasilij; Perkson,
Anti; Leis, Jaan; Zheng, Jie; Konstantinovich, Gordeev Sergey;
Kolotilova, Julia Y.; Cederstroem, Jan; Wallace, Clarence L.
(Ultratec Ltd., UK). PCT Int. Appl. WO 2002039468 A2
20020516, 48 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT,
AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK,
DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS,
JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,
MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL,
TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ,

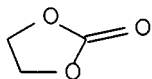
MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-EP12837 20011106. PRIORITY: US 2000-247593P 20001109; RU 2001-117550 20010615.

AB The present invention relates to an elec. double layer capacitor including ≥ 1 pair of polarizable electrodes connected to current collectors, a separator made of ion-permeable but electron-insulating material interposed between the electrodes in each pair of electrodes, and a liq. **electrolyte**. According to the invention the electrodes include a layer of C particles having a narrow distribution of nanopores therein, the pore sizes of the nanopores being adapted to fit the ion sizes of the **electrolyte**.

IT **96-49-1**, Ethylene carbonate **108-32-7**, Propylene carbonate **110-67-8**, 3-Methoxypropionitrile (aprotic polar solvent; elec. double layer supercapacitor with electrode of carbon particle layer and a method of manufg. such a supercapacitor)

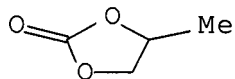
RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



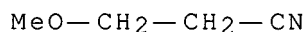
RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IC ICM H01G009-00

CC 76-10 (Electric Phenomena)
 Section cross-reference(s): 35

IT Binders
 Capacitor electrodes
Electrolytes
 Filaments
 Halogenation
 Thermal decomposition
 (elec. double layer supercapacitor with electrode of carbon particle layer and a method of manufg. such a supercapacitor)

IT 68-12-2, Dimethylformamide, uses 75-05-8, Acetonitrile, uses 78-93-3, Methyl ethyl ketone, uses 96-48-0, γ -Butyrolactone **96-49-1**, Ethylene carbonate 100-47-0, Benzonitrile, uses 107-12-0, Propionitrile 108-29-2, γ -Valerolactone **108-32-7**, Propylene carbonate 109-74-0, Butyronitrile 109-99-9, Tetrahydrofuran, uses **110-67-8**, 3-Methoxypropionitrile 110-71-4 872-50-4, N-Methyl pyrrolidone, uses
 (aprotic polar solvent; elec. double layer supercapacitor with electrode of carbon particle layer and a method of manufg. such a supercapacitor)

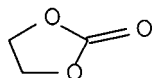
IT 14874-70-5D, Tetrafluoroborate, N,N-dialkyl-1,4-diazabicyclo[2.2.2]octanediium salts 14874-70-5D, Tetrafluoroborate, tetraalkylammonium salts 14874-70-5D, Tetrafluoroborate, tetrakis(dialkylamino) phosphonium salts 16919-18-9D, Hexafluorophosphate, N,N-dialkyl-1,4-diazabicyclo[2.2.2]octanediium salts 16919-18-9D, Hexafluorophosphate, tetraalkylammonium salts 16919-18-9D, Hexafluorophosphate, tetrakis(dialkylamino) phosphonium salts (liq. **electrolyte** made of; elec. double layer supercapacitor with electrode of carbon particle layer and a method of manufg. such a supercapacitor)

L39 ANSWER 9 OF 19 HCA COPYRIGHT 2007 ACS on STN
 136:88337 Dye-sensitized photoelectric transducer. Yanagida, Shozo; Ikeda, Masaaki; Shigaki, Koichiro; Inoue, Teruhisa (Nippon Kayaku Kabushiki Kaisha, Japan). PCT Int. Appl. WO 2002001667 A1 **20020103**, 25 pp. DESIGNATED STATES: W: CA, CN, JP, KR, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2001-JP5452 20010626. PRIORITY: JP 2000-195464 20000629.

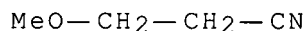
AB The invention aims at developing an expensive photoelec. transducer exhibiting a high conversion efficiency. The solar **battery**, using the photoelec. transducer, comprises a thin film made of semiconductor fine particles sensitized by having a specific azo dye supported thereon. The photoelec. transducer contains arom. group to which at least one group, selected from carboxyl, hydroxyl,

phosphoric acid, phosphoric ester, or mercapto, is bonded either directly or indirectly. Another arom. group is substituted by, at least one, electron-donating group.

IT **96-49-1**, Ethylene carbonate
(dye-sensitized photoelec. transducer for solar **battery**)
RN 96-49-1 HCA
CN 1,3-Dioxolan-2-one (CA INDEX NAME)



IT **110-67-8**
(dye-sensitized photoelec. transducer for solar **battery**)
RN 110-67-8 HCA
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IC ICM H01M014-00
ICS H01L031-04
CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76, 77
IT Dyes
Photoelectric devices
Semiconductor materials
Solar cells
(dye-sensitized photoelec. transducer for solar **battery**)
IT Transducers
(photoelec.; dye-sensitized photoelec. transducer for solar **battery**)
IT 101-51-9 3566-94-7 6434-57-7 7440-06-4, Platinum, uses
13463-67-7, Titania, uses 14847-54-2 57741-47-6 61212-66-6
85720-86-1 93935-92-3 141460-19-7 386206-87-7 386206-88-8
386206-89-9 386206-90-2 386206-91-3 386206-92-4 386206-93-5
386206-94-6 386206-95-7 386206-97-9 386207-00-7 386207-03-0
386207-05-2 386207-06-3 386207-07-4 386207-08-5 386207-09-6
386207-10-9 386207-11-0 386207-12-1 386207-13-2 386207-14-3

386207-15-4 386207-16-5 386207-17-6 386207-18-7 386207-19-8
386207-20-1 386207-21-2 386207-22-3 386207-23-4 386213-80-5
(dye-sensitized photoelec. transducer for solar **battery**
)

IT **96-49-1**, Ethylene carbonate 7550-45-0, Titanium
tetrachloride, uses 10377-51-2, Lithium iodide
(dye-sensitized photoelec. transducer for solar **battery**
)

IT 75-05-8, Acetonitrile, reactions **110-67-8** 631-40-3,
Tetra(propylammonium) iodide 7553-56-2, Iodine, reactions
118676-08-7 218151-78-1
(dye-sensitized photoelec. transducer for solar **battery**
)

L39 ANSWER 10 OF 19 HCA COPYRIGHT 2007 ACS on STN

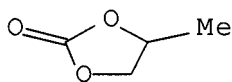
133:225554 Nonaqueous **electrolyte** solutions containing
cyanoethyl compounds and nonaqueous (lithium) secondary
batteries. Toriida, Masahiro; Omi, Katsuhiko; Tan, Hiroaki
(Mitsui Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho
JP 2000243444 A **20000908**, 7 pp. (Japanese). CODEN:
JKXXAF. APPLICATION: JP 1999-41104 19990219.

AB The solns. are nonaq. solvents contg. RO(R1O)nCH2CH2CN (R = H, C1-10
hydrocarbon, cyanoethyl; R1 = C1-4 alkylene; n = integer or 0-30) and
electrolytes. The solns. may also contain linear carbonate esters
and/or cyclic carbonate esters given in Markush structures.
Secondary **batteries**, esp. lithium ion **batteries**, comprising the
electrolyte solns. are also claimed. **Batteries** with excellent
charge-discharge characteristics and high performance, under loaded
conditions and low-temp., are obtained.

IT **108-32-7**, Propylene carbonate **110-67-8**
2141-62-0
(secondary (lithium) **batteries** comprising of nonaq.
solvents contg. cyanoethyl compds.)

RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH₂—CH₂—CN

RN 2141-62-0 HCA
CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)

EtO—CH₂—CH₂—CN

IC ICM H01M010-40
ICS H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium secondary **battery** nonaq **electrolyte**;
electrolyte soln cyanoethyl additive secondary
battery; cyclic carbonate nonaq **electrolyte**
secondary **battery**; linear carbonate nonaq
electrolyte secondary **battery**; carbonate nonaq
electrolyte secondary **battery**
IT Secondary **batteries**
(lithium; secondary (lithium) **batteries** comprising of
nonaq. solvents contg. cyanoethyl compds.)
IT **Battery electrolytes**
(secondary (lithium) **batteries** comprising of nonaq.
solvents contg. cyanoethyl compds.)
IT Lithium alloy, base
(anode; secondary (lithium) **batteries** comprising of
nonaq. solvents contg. cyanoethyl compds.)
IT 12190-79-3, HLC 21
(HLC 21, cathode; secondary (lithium) **batteries**
comprising of nonaq. solvents contg. cyanoethyl compds.)
IT 7439-93-2, Lithium, uses 7440-44-0, MCMB 6-28, uses
(anode; secondary (lithium) **batteries** comprising of
nonaq. solvents contg. cyanoethyl compds.)
IT 105-58-8, Diethyl carbonate **108-32-7**, Propylene carbonate
110-67-8 616-38-6, Dimethyl carbonate 623-53-0, Methyl
ethyl carbonate 1656-48-0, Bis(2-cyanoethyl) ether
2141-62-0 3386-87-6 4437-85-8, Butylene carbonate
35633-50-2
(secondary (lithium) **batteries** comprising of nonaq.
solvents contg. cyanoethyl compds.)

L39 ANSWER 11 OF 19 HCA COPYRIGHT 2007 ACS on STN
132:210209 Secondary nonaqueous-**electrolyte batteries**

with **electrolytes** containing cyanoethoxy compounds.

Kobayashi, Aya; Izuchi, Shuichi (Yuasa Battery Co., Ltd., Japan).
Jpn. Kokai Tokkyo Koho JP 2000077096 A **20000314**, 5 pp.

(Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-244674.19980831.

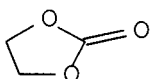
AB Claimed **batteries** are equipped with **electrolytes** contg. cyanoethoxy compds. $R(OC_2H_4CN)_n$ ($n = 1-4$; $R = C_mH_{2m+2-n}$, $C_mH_{2m+2-n}(OC_2H_4)_p$, $C_mH_{2m+2-n}CO$, or $C_mH_{2m+2-n}OCO$; $m = 1-3$; $p = 1-4$) as nonaq. solvents for Li salts. Optionally, the **batteries** are equipped with gelled polymer **electrolytes**. The **batteries** have long cycle life at low temp.

IT **96-49-1**, Ethylene carbonate **108-32-7**, Propylene carbonate **110-67-8** **2141-62-0**

(solvents; nonaq. **batteries** with **electrolytes** contg. cyanoethoxy compds. for long cycle life at low temp.)

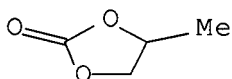
RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



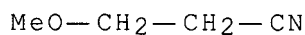
RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



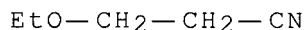
RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



RN 2141-62-0 HCA

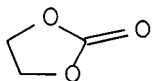
CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)



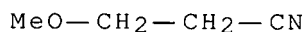
IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST cyanoethoxy compd nonaq **electrolyte** solvent
battery; lithium **battery electrolyte**
 solvent cyanoethoxy compd
 IT Secondary **batteries**
 (lithium; nonaq. **batteries** with **electrolytes**
 contg. cyanoethoxy compds. for long cycle life at low temp.)
 IT **Battery electrolytes**
 (nonaq. **batteries** with **electrolytes** contg.
 cyanoethoxy compds. for long cycle life at low temp.)
 IT Polyoxyalkylenes, uses
 (trifunctional acrylates, lithium complexes, gelled
electrolytes; nonaq. **batteries** with
electrolytes contg. cyanoethoxy compds. for long cycle
 life at low temp.)
 IT 14283-07-9, Lithium tetrafluoroborate
 (**electrolytes**; nonaq. **batteries** with
electrolytes contg. cyanoethoxy compds. for long cycle
 life at low temp.)
 IT 25322-68-3D, Polyethylene glycol, trifunctional acrylates, lithium
 complexes
 (gelled **electrolytes**; nonaq. **batteries** with
electrolytes contg. cyanoethoxy compds. for long cycle
 life at low temp.)
 IT 96-48-0, γ -Butyrolactone **96-49-1**, Ethylene carbonate
108-32-7, Propylene carbonate **110-67-8**
 1656-48-0, Bis-2-cyanoethyl ether **2141-62-0** 3386-87-6
 5325-93-9 20597-73-3 32846-35-8, Bis 2-cyanoethyl carbonate
 35633-51-3 260362-83-2
 (solvents; nonaq. **batteries** with **electrolytes**
 contg. cyanoethoxy compds. for long cycle life at low temp.)
 L39 ANSWER 12 OF 19 HCA COPYRIGHT 2007 ACS on STN
 132:183113 Secondary nonaqueous **electrolyte batteries**
 . Tabuchi, Toru; Aoki, Takashi; Nakamitsu, Kazuhiro; Mizutani,
 Minoru (Japan Storage Battery Co., Ltd., Japan; GS Melcotec K. K.).
 Jpn. Kokai Tokkyo Koho JP 2000067913 A **20000303**, 7 pp.
 (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-305833 19981027.
 PRIORITY: JP 1998-159629 19980608.
 AB The **batteries** use a nonaq. Li salt **electrolyte** soln. contg. a cyano
 group contg. ether or glycol and a carbonate ester.
 IT **96-49-1**, Ethylene carbonate **110-67-8**
 (**electrolyte** solvent mixts. contg. cyano ethers or
 cyano glycols and carbonate esters for secondary lithium

batteries)

RN 96-49-1 HCA
CN 1,3-Dioxolan-2-one (CA INDEX NAME)



RN 110-67-8 HCA
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

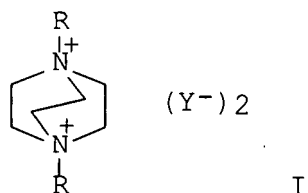


IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary lithium **battery electrolyte** soln
compn; lithium **battery electrolyte** cyano ether
carbonate ester; cyano glycol carbonate ester lithium
battery electrolyte
IT **Battery electrolytes**
(**electrolyte** solvent mixts. contg. cyano ethers or
cyano glycols and carbonate esters for secondary lithium
batteries)
IT **96-49-1**, Ethylene carbonate **110-67-8** 623-53-0,
Ethyl methyl carbonate 3386-87-6 21324-40-3, Lithium
hexafluorophosphate
(**electrolyte** solvent mixts. contg. cyano ethers or
cyano glycols and carbonate esters for secondary lithium
batteries)

L39 ANSWER 13 OF 19 HCA COPYRIGHT 2007 ACS on STN
132:8268 Novel **electrolytes** for electrochemical double layer
capacitors. Maletin, Yurii; Strizhakova, Natalie; Izotov, Vladimir;
Mironova, Antonia; Danilin, Valery; Kozachov, Sergey (Superfarad
Ltd., UK). PCT Int. Appl. WO 9960587 A1 **19991125**, 22 pp.
DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY,
CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU,
ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV,
MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK,
SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG,
KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE,

DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-EP3412 19990518. PRIORITY: UA 1998-52573 19980518.

GI

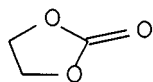


AB Novel org. **electrolytes** comprising tetrafluoroborates and hexafluorophosphates of doubly charged cations of N,N-dialkyl-1,4-diazabicyclo[2.2.2]octanediium (DADACO) are disclosed, which have the general formula I, where R = C1-C4 alkyl and Y⁻ = BF₄⁻ or PF₆⁻. The compds. are dissolved in an aprotic polar solvent or a mixt. of such solvents to form **electrolytes** for electrochem. double layer capacitors.

IT **96-49-1**, Ethylene carbonate **108-32-7**, Propylene carbonate **110-67-8**, 3-Methoxypropionitrile (solvent; **electrolytes** for electrochem. double layer capacitors contg.)

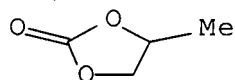
RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)

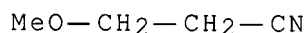


RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IC ICM H01G009-038
CC 76-10 (Electric Phenomena)
Section cross-reference(s): 72
ST **electrolyte** electrochem double layer capacitor;
alkyldiazabicyclooctanediium tetrafluoroborate hexafluorophosphate
electrolyte electrochem double layer capacitor; fluoroborate
dialkyldiazabicyclooctanediium **electrolyte** electrochem
double layer capacitor; fluorophosphate
dialkyldiazabicyclooctanediium **electrolyte** electrochem
double layer capacitor; polar solvent **electrolyte**
electrochem double layer capacitor
IT Capacitors
(double layer; **electrolytes** for electrochem. double
layer capacitors)
IT **Electrolytes**
(**electrolytes** for electrochem. double layer capacitors)
IT Polar solvents
(**electrolytes** for electrochem. double layer capacitors
contg.)
IT 429-06-1, Tetraethylammonium tetrafluoroborate 69282-14-0
120099-85-6 120099-88-9
(**electrolytes** for electrochem. double layer capacitors
contg.)
IT 68-12-2, N,N-Dimethylformamide, uses 75-05-8, Acetonitrile, uses
78-93-3, 2-Butanone, uses 96-48-0, γ -Butyrolactone
96-49-1, Ethylene carbonate 107-12-0, Propionitrile
108-29-2, γ -Valerolactone **108-32-7**, Propylene
carbonate 109-99-9, Tetrahydrofuran, uses **110-67-8**,
3-Methoxypropionitrile 110-71-4 872-50-4, 1-Methyl-2-
pyrrolidinone, uses
(solvent; **electrolytes** for electrochem. double layer
capacitors contg.)

L39 ANSWER 14 OF 19 HCA COPYRIGHT 2007 ACS on STN
130:252076 Preparation of alcohol cyanoethyl ethers for lithium
batteries and organic **electrolytic** solutions
containing them. Nishikawa, Satoshi (Sunstar Engineering, Inc.,
Japan; Uni Sunstar Bv). Jpn. Kokai Tokkyo Koho JP 11080112 A
19990326 Heisei, 9 pp. (Japanese). CODEN: JKXXAF.

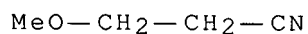
APPLICATION: JP 1997-245178 19970910.

AB (R1O)aR2(OCH2CH2CN)b (I; R1 = C11-3 alkyl; R2 = residue of alcs. having 1-4 OH groups; a = 0-3; b = 1-4; a + b = 1-4) are prepd. by cyanoethylation of alcs. with acrylonitrile (II) in the presence of ≥ 1 selected from (a) LiOH and (b) Li metal, Li alkoxides, compds. comprising Li and active methylene compds. such as Li acetylacetonate and in the absence of H2O. The org. **electrolyte** solns. for Li **batteries** or Li ion secondary **batteries** comprise I and Li salts dissolved therein. The **electrolyte** solns. may contain aprotic polar compds. This method gives I without discoloration due to polymn. of II. II was added dropwise to a mixt. of ethylene glycol and LiOH.H2O at 40-0° over 2 h, and the reaction mixt. was further stirred at 40-50° for 3 h to give ethylene glycol bis(2-cyanoethyl) ether (III) with purity $\geq 99.5\%$. LiClO4 was dissolved in III to give an **electrolyte** soln. showing cond. $2.7 + 10^{-3} \text{ S}\cdot\text{cm}^{-1}$.

IT 110-67-8P, 2-Cyanoethyl methyl ether 2141-62-0P
(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

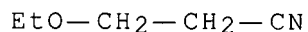
RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



RN 2141-62-0 HCA

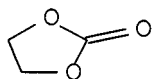
CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)



IT 96-49-1, Ethylene carbonate
(solvent; prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



IC ICM C07C255-13
ICS B01J023-04; C07C253-30; H01M010-40; C07B061-00

CC 23-19 (Aliphatic Compounds)
Section cross-reference(s): 52

ST polyol cyanoethyl ether prepn **battery electrolyte**
; alc cyanoethyl ether prepn **battery electrolyte**
; acrylonitrile cyanoethylation polyol lithium hydroxide catalyst;
ethylene glycol cyanoethyl ether **battery electrolyte**

IT Polar solvents
Polar solvents
(aprotic; prepn. of (poly)alc. cyanoethyl ethers as
battery electrolytes by LiOH-catalyzed reaction
of polyols and acrylonitrile)

IT Cyanoethylation
Cyanoethylation
(catalysts; prepn. of (poly)alc. cyanoethyl ethers as
battery electrolytes by LiOH-catalyzed reaction
of polyols and acrylonitrile)

IT Ethylation catalysts
Ethylation catalysts
(cyanoethylation catalysts; prepn. of (poly)alc. cyanoethyl
ethers as **battery electrolytes** by
LiOH-catalyzed reaction of polyols and acrylonitrile)

IT Primary **batteries**
Secondary **batteries**
(lithium; prepn. of (poly)alc. cyanoethyl ethers as
battery electrolytes by LiOH-catalyzed reaction
of polyols and acrylonitrile)

IT Alcohols, reactions
(polyhydric; prepn. of (poly)alc. cyanoethyl ethers as
battery electrolytes by LiOH-catalyzed reaction
of polyols and acrylonitrile)

IT **Battery electrolytes**
(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and
acrylonitrile)

IT Alcohols, reactions
Glycols, reactions
Polyoxyalkylenes, reactions
(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and
acrylonitrile)

IT 7439-93-2, Lithium, uses 18115-70-3, Lithium acetylacetonate, uses
(prepn. of (poly)alc. cyanoethyl ethers as **battery**

electrolytes by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT 112-27-6P

(prepn. of (poly)alc. cyanoethyl ethers as **battery**

electrolytes by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT 110-47-4P **110-67-8P**, 2-Cyanoethyl methyl ether

2141-62-0P 2465-91-0P 2465-93-2P 3386-87-6P, Ethylene glycol bis(2-cyanoethyl) ether 6959-71-3P 9003-07-0DP, Polypropylene, triol derivs., bis(2-cyanoethyl) ether 16792-83-9P, Propylene glycol bis(2-cyanoethyl) ether 22397-30-4P 22397-31-5P, Diethylene glycol bis(2-cyanoethyl) ether 25265-71-8DP, Dipropylene glycol, ether with 2-cyanoethyl and Me 35633-45-5P 35633-50-2P 35633-51-3P 39377-81-6P 39927-06-5P, Polyethylene glycol bis(2-cyanoethyl) ether 51299-82-2P 57741-46-5P, Triethylene glycol bis(2-cyanoethyl) ether 59113-36-9DP, Diglycerin, ether with tetrakis(2-cyanoethyl) 61579-08-6P 180316-31-8P, 2,5,8,11-Tetraoxatetradecane-14-nitrile 221628-60-0P 221628-62-2P 221628-64-4P

(prepn. of (poly)alc. cyanoethyl ethers as **battery**

electrolytes by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT 56-81-5, 1,2,3-Propanetriol, reactions 57-55-6, 1,2-Propanediol, reactions 64-17-5, Ethanol, reactions 67-56-1, Methanol, reactions 67-63-0, Isopropanol, reactions 71-23-8, n-Propanol, reactions 71-36-3, n-Butanol, reactions 102-71-6, Triethanolamine, reactions 107-13-1, 2-Propenenitrile, reactions 107-21-1, 1,2-Ethanediol, reactions 109-86-4, Ethylene glycol monomethyl ether 110-80-5, Ethylene glycol monoethyl ether 111-46-6, Diethylene glycol, reactions 111-77-3, Diethylene glycol monomethyl ether 112-35-6, Triethylene glycol monomethyl ether 115-77-5, reactions 122-20-3, Triisopropanolamine 1320-67-8, Propylene glycol monomethyl ether 4439-20-7 25265-71-8, Dipropylene glycol 25322-68-3 25322-69-4, Polypropylene glycol 25618-55-7 34590-94-8, Dipropylene glycol monomethyl ether 52125-53-8, Propylene glycol monoethyl ether 59113-36-9, Diglycerin

(prepn. of (poly)alc. cyanoethyl ethers as **battery**

electrolytes by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT 7791-03-9, Lithium perchlorate 14283-07-9

(prepn. of (poly)alc. cyanoethyl ethers as **battery**

electrolytes by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT 1310-65-2, Lithium hydroxide

(prepn. of polyol cyanoethyl ethers as **battery**

electrolytes by LiOH-catalyzed reaction of polyols and

acrylonitrile)

IT 96-49-1, Ethylene carbonate
(solvent; prepn. of (poly)alc. cyanoethyl ethers as
battery electrolytes by LiOH-catalyzed reaction
of polyols and acrylonitrile)

L39 ANSWER 15 OF 19 HCA COPYRIGHT 2007 ACS on STN

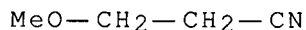
126:133588 Nonaqueous **electrolyte batteries** using
electrolytes containing self discharge inhibitors. Jinno,
Maruo; Uehara, Mayumi; Sakurai, Atsushi; Nishio, Koji; Saito,
Toshihiko (Sanyo Denki Kk, Japan). Jpn. Kokai Tokkyo Koho JP
08321312 A 19961203 Heisei, 5 pp. (Japanese). CODEN:
JKXXAF. APPLICATION: JP 1995-150844 19950524.

AB Li **batteries** use **electrolytes** contg. LiCF₃SO₃ or LiPF₆ dissolved in
high dielec. const. solvent selected from ethylene carbonate,
propylene carbonate, and butylene carbonate; where the **electrolytes**
contain 1-20 vol.% additive selected from triethylamine, n-
butylamine, aniline, tri-Me hydroxylamine, 1-dimethylamino-2-methoxy
ethane, acetonitrile, acrylonitrile, 3-methoxy propionitrile,
benzonitrile, nitromethane, nitroethane, N,N-dimethylacetamide, N,N-
dimethylformamide, formamide, N-methyl-2-pyrrolidone, N,N'-dimethyl
imidazolidinone, isoxazole, 3,5-di-Me isoxazole, 3-methyl-2-
oxazolidone, 1,2,3-oxadiazole, N-Me morpholine, di-Me sulfide, Et Me
sulfide, 2-Me thiophene, 1-butane thiol, benzenethiol, di-Me
sulfate, di-Et sulfate, di-Me sulfite, di-Et sulfite,
butadienesulfone, 3-Me sulfolene, 1,4-thioxane, phenoxathiin, 1,4-
thiazine, thiomorpholine, pyridine, 1,3-dimethyl-2-imidazolidinone,
DMSO, di-Me sulfone, Me Et sulfonate, and di-Me sulfinite. The
electrolytes may contain 1,2-dimethoxyethane. Since the additives
react with Li in anodes and the solvents and the solutes in the
electrolytes to form coatings on the anodes for prevention of the
reaction between the **electrolytes** and the anodes, the **batteries** have
improved storage property. These **batteries** have long shelf life.

IT 110-67-8, 3-Methoxypropionitrile
(self discharge inhibitors in nonaq. **electrolyte** solns.
for lithium **batteries**)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

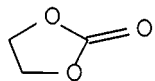


IT 96-49-1, Ethylene carbonate 108-32-7, Propylene
carbonate
(solvents for nonaq. **electrolyte** solns. contg. self

discharge inhibitors for lithium **batteries**)

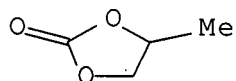
RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)



RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



IC ICM H01M006-16

ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium **battery electrolyte** self discharge
inhibitor

IT **Battery electrolytes**

(self discharge inhibitors in nonaq. **electrolyte** solns.
for lithium **batteries**)

IT 7439-93-2, Lithium, uses 21324-40-3, Lithium hexafluorophosphate
33454-82-9, Lithium trifluoromethanesulfonate
(nonaq. **electrolyte** solns. contg. self discharge
inhibitors for lithium **batteries**)

IT 62-53-3, Aniline, uses 64-67-5, Diethyl sulfate 67-68-5,
Dimethylsulfoxide, uses 67-71-0, Dimethylsulfone 68-12-2,
N,N-Dimethylformamide, uses 75-05-8, Acetonitrile, uses 75-12-7,
Formamide, uses 75-18-3, Dimethylsulfide 75-52-5, Nitromethane,
uses 77-78-1, Dimethyl sulfate 79-24-3, Nitroethane 80-73-9,
N,N'-Dimethylimidazolidinone 100-47-0, Benzonitrile, uses
107-13-1, Acrylonitrile, uses 108-98-5, Benzenethiol, uses
109-02-4, N-Methylmorpholine 109-73-9, n-Butylamine, uses
109-79-5, 1-Butanethiol **110-67-8**, 3-Methoxypropionitrile
110-86-1, Pyridine, uses 121-44-8, Triethylamine, uses 123-90-0,
Thiomorpholine 127-19-5, N,N-Dimethylacetamide 262-20-4,
Phenoxathiin 288-14-2, Isoxazole 288-43-7, 1,2,3-Oxadiazole
290-56-2, 1,4-Thiazine 290-57-3, 1,4-Thiazine 300-87-8,
3,5-Dimethylisoxazole 554-14-3, 2-Methylthiophene 616-42-2,

Dimethyl sulfite 623-81-4, Diethyl sulfite 624-89-5,
Ethylmethanethiol 666-15-9 872-50-4, N-Methyl-2-pyrrolidone,
uses 1193-10-8, 3-Methanethiol 1912-28-3, Methyl ethyl
sulfonate 3030-44-2 5669-39-6, Trimethylhydroxylamine
15980-15-1, 1,4-Thioxane 19836-78-3 28452-93-9, Butadienesulfone
(self discharge inhibitors in nonaq. **electrolyte** solns.
for lithium **batteries**)

IT **96-49-1**, Ethylene carbonate **108-32-7**, Propylene
carbonate 110-71-4, 1,2-Dimethoxyethane 4437-85-8, Butylene
carbonate
(solvents for nonaq. **electrolyte** solns. contg. self
discharge inhibitors for lithium **batteries**)

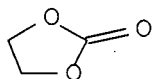
L39 ANSWER 16 OF 19 HCA COPYRIGHT 2007 ACS on STN
125:345282 Nonaqueous **electrolytic** solution with high electric
conductivity for electrochemical capacitor. Ue, Makoto; Takeda,
Masayuki; Takehara, Masahiro (Mitsubishi Chemical Corp., Japan).
Jpn. Kokai Tokkyo Koho JP 08250378 A **19960927** Heisei, 4
pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-48743
19950308.

AB The soln. contains a quaternary ammonium salt R1R2R3N+R4.Et3B-Me (R1-
4 = C1-4 alkyl) and a bipolar aprotic solvent. The soln. showed
improved elec. cond.

IT **96-49-1**, Ethylene carbonate **108-32-7**, Propylene
carbonate **110-67-8**, 3-Methoxypropionitrile
(solvent; nonaq. **electrolytic** capacitor soln. contg.
quaternary ammonium salt with high elec. cond.)

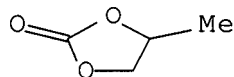
RN 96-49-1 HCA

CN 1,3-Dioxolan-2-one (CA INDEX NAME)

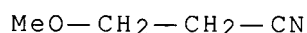


RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IC ICM H01G009-038
CC 76-10 (Electric Phenomena)
ST **electrolytic** capacitor soln quaternary ammonium salt;
bipolar aprotic solvent **electrolytic** capacitor soln;
borate ammonium **electrolytic** capacitor nonaq soln
IT Quaternary ammonium compounds, uses
(nonaq. **electrolytic** capacitor soln. contg. quaternary
ammonium salt with high elec. cond.)
IT Electric capacitors
(**electrolytic**, nonaq. **electrolytic** capacitor
soln. contg. quaternary ammonium salt with high elec. cond.)
IT 183858-41-5 183858-43-7
(nonaq. **electrolytic** capacitor soln. contg. quaternary
ammonium salt with high elec. cond.)
IT 75-05-8, Acetonitrile, uses 96-48-0, γ -Butyrolactone
96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
108-29-2, γ -Valerolactone **108-32-7**, Propylene
carbonate **110-67-8**, 3-Methoxypropionitrile 126-33-0,
Sulfolane 512-56-1, Trimethyl phosphate 542-28-9,
 δ -Valerolactone 616-38-6 623-53-0, Ethyl methyl carbonate
872-93-5, 3-Methylsulfolane 4437-69-8, Isobutylene carbonate
4437-85-8, Butylene carbonate
(solvent; nonaq. **electrolytic** capacitor soln. contg.
quaternary ammonium salt with high elec. cond.)

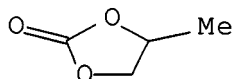
L39 ANSWER 17 OF 19 HCA COPYRIGHT 2007 ACS on STN
122:145421 Model for oxide film growth in aluminum anodization. Izotov,
V. Yu.; Maletin, Yu. A.; Koval, L. B.; Mironova, A. A.; Kozachkov,
S. G.; Nezdorovin, V. P. (V. I. Vernadsky Inst., National Acad. Sci.
Ukraine, Kiev, 252680, Ukraine). Teoreticheskaya i
Eksperimental'naya Khimiya, 30(5), 272-6 (Russian) **1994**.
CODEN: TEKHA4. ISSN: 0497-2627. Publisher: Institut Fizicheskoi
Khimii im. L. V. Pisarzhevskogo AN Ukrainy.
AB A theor. model was developed to describe the formation of amorphous
or polycryst. oxide films on the surface of Al during its
anodization. Satisfactory agreement between the model and exptl.
data on anodization in **electrolytes** based on various dicarboxylic
acids is illustrated.
IT **108-32-7**, Propylene carbonate **110-67-8**,

3-Methoxypropionitrile

(aluminum anodization in baths contg. various solvents and salts)

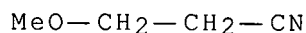
RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



CC 72-7 (Electrochemistry)

Section cross-reference(s): 56

IT 68-12-2, Dimethylformamide, uses 75-05-8, Acetonitrile, uses

79-16-3, N-Methylacetamide 96-48-0, γ -Butyrolactone

107-21-1, Ethylene glycol, uses **108-32-7**, Propylene

carbonate **110-67-8**, 3-Methoxypropionitrile 111754-40-6,

Tetraethylammonium maleate, uses

(aluminum anodization in baths contg. various solvents and salts)

L39 ANSWER 18 OF 19 HCA COPYRIGHT 2007 ACS on STN

107:248434 **Electrolyte** solution of quaternary ammonium salts

for **electrolytic** capacitors. Mori, Shoichiro; Ue, Makoto

(Mitsubishi Petrochemical Co., Ltd., Japan). Eur. Pat. Appl. EP

227433 A2 **19870701**, 13 pp. DESIGNATED STATES: R: DE, FR,

GB, NL. (English). CODEN: EPXXDW. APPLICATION: EP 1986-309882

19861217. PRIORITY: JP 1985-286980 19851220; JP 1985-286982

19851220; JP 1986-98673 19860428.

AB An **electrolyte** soln. for use in an **electrolytic** capacitor comprises

as a solute ≥ 1 quaternary NH₄⁺ salt of a carboxylic acid which is

selected from 5-40 wt.% of (a) maleic acid and/or citraconic acid or

(b) 7-30 wt.% of an arom. carboxylic acid or (c) 1-40 wt.% of a

branched-chain aliph. dicarboxylic acid. In (c) the salt has 11-30 C

atoms. The **electrolyte** soln. has high elec. cond. when used, e.g.,

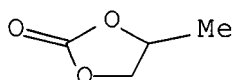
with Al foil electrodes. The solvent is aprotic, preferably an amide

or lactone.

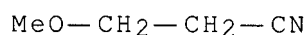
IT **108-32-7**, Propylene carbonate **110-67-8**

(**electrolytes** contg., for capacitors)

RN 108-32-7 HCA
CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IC ICM H01G009-02
CC 76-10 (Electric Phenomena)
ST quaternary ammonium salt **electrolyte** capacitor; maleate **electrolyte** capacitor; citraconate **electrolyte** capacitor; arom carboxylate capacitor **electrolyte**; aliph dicarboxylate capacitor **electrolyte**
IT Quaternary ammonium compounds, uses and miscellaneous (**electrolytes** contg., for capacitors)
IT Amides, uses and miscellaneous
Carboxylic acids, uses and miscellaneous
Lactones
(aliph., **electrolytes** contg., for capacitors)
IT Carboxylic acids, uses and miscellaneous
(aryl, **electrolytes** contg., for capacitors)
IT Electric capacitors
(**electrolytic**, quaternary ammonium salts as **electrolytes** for)
IT 68-12-2, N,N-Dimethylformamide, uses and miscellaneous 96-48-0,
γ-Butyrolactone 107-21-1, uses and miscellaneous
108-32-7, Propylene carbonate **110-67-8** 512-56-1,
Trimethyl phosphate 3774-74-1, Tetraethylammonium salicylate
3774-75-2, Tetraethylammonium γ-resorcylate 16909-22-1,
Tetraethylammonium benzoate 68570-55-8, Tetraethylammonium
p-nitrobenzoate 68874-26-0 111754-37-1 111754-38-2
111754-39-3 111754-40-6 111754-42-8 111754-43-9 111754-45-1
111754-46-2 111754-47-3 111754-48-4 111754-50-8 111754-52-0
111754-54-2 111778-54-2
(**electrolytes** contg., for capacitors)

L39 ANSWER 19 OF 19 HCA COPYRIGHT 2007 ACS on STN

93:17877 Nonaqueous **electrolytic** capacitor **electrolyte**

. Finkelstein, Manuel; Dunkl, Franz S.; Ross, Sidney D. (Sprague Electric Co., USA). U.S. US 4189761 **19800219**, 5 pp. (English). CODEN: USXXAM. APPLICATION: US 1977-824147 19770812.

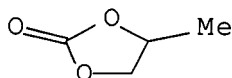
AB Solutes for use in nonaq. solvents, esp. 4-butyrolactone, are described. The solvents are alkyl-substituted ammonium dialkylphosphate salts, which are obtained from the reaction of trialkylphosphate and a cyclic amine or an aliph. tertiary amine. In particular, the trialkylphosphates can be trimethyl-, triethyl-, or tributylphosphate. The amine can be morpholine, N-methylmorpholine, piperidine, piperazine, triethylamine, or tributylamine. A set of 6 Al **electrolytic** capacitors was constructed using the following **electrolyte** formulation: 20 g N-ethylpiperidinium diethylphosphate, 120 g 4-butyrolactone, and 3 g H₂O. The capacitors were of 250 V rating. For life testing at 200 V d.c. and 125°, the capacitance and dissipation factor did not change significantly after 2000 h and leakage current improved. The capacitors also showed excellent temp. stability.

IT **108-32-7 110-67-8**

(elec. capacitors with nonaq. **electrolytes** from)

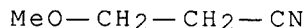
RN 108-32-7 HCA

CN 1,3-Dioxolan-2-one, 4-methyl- (CA INDEX NAME)



RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IC H01G009-02

INCL 361433000

CC 76-3 (Electric Phenomena)

ST **electrolyte** aluminum capacitor

IT Electric capacitors

(**electrolytic**, nonaq. **electrolyte** for)

IT 5802-67-5 69083-17-6 73918-58-8 73918-59-9 73918-60-2

73918-61-3 73918-62-4 73918-63-5 73918-64-6 73918-65-7

73918-66-8

(elec. capacitors contg. nonaq. **electrolyte** from)

IT 68-12-2, uses and miscellaneous 96-48-0 107-21-1, uses and
miscellaneous **108-32-7 110-67-8** 111-76-2
111-77-3

(elec. capacitors with nonaq. **electrolytes** from)

=> D L48 1-10 CBIB ABS HITSTR HITIND

L48 ANSWER 1 OF 10 HCA COPYRIGHT 2007 ACS on STN

143:29529 Nonaqueous **electrolytes** having an extended temperature range for **battery** applications. Sun, Luying (USA). U.S. Pat. Appl. Publ. US 2005123835 A1 20050609, 17 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-731268 20031209.

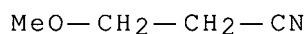
AB The present invention discloses non-aq. **electrolytes** having an extended temp. range for **battery** applications. The **electrolyte** comprises an **electrolyte** salt, e.g., LiPF₆, a first non-aq. solvent, and a second non-aq. solvent. The **electrolyte** of the present invention has higher ionic cond., lower f.p., and lower vapor pressure at high temp. than com. **electrolytes**. These non-aq. **electrolytes** can be used, for example, in lithium-ion **batteries**. Methods of making lithium-ion **batteries** are also described.

IT 110-67-8, 3-Methoxypropionitrile 2141-62-0,
3-Ethoxypropionitrile 7791-03-9, Lithium perchlorate
14283-07-9, Lithium tetrafluoroborate 15365-14-7,
Iron lithium phosphate felipo4 21324-40-3, Lithium
hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate
90076-65-6

(nonaq. **electrolytes** having extended temp. range for
battery applications)

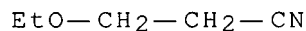
RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



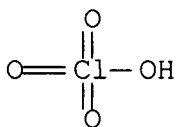
RN 2141-62-0 HCA

CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)



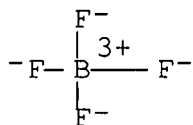
RN 7791-03-9 HCA

CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)



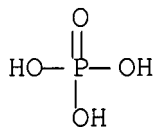
● Li

RN 14283-07-9 HCA
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



● Li⁺

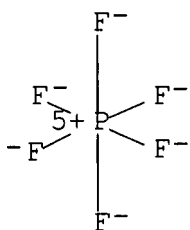
RN 15365-14-7 HCA
CN Phosphoric acid, iron(2+) lithium salt (1:1:1) (9CI) (CA INDEX NAME)



● Fe(II)

● Li

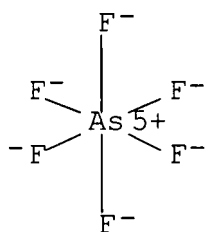
RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

RN 29935-35-1 HCA

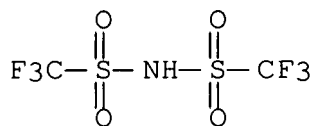
CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

RN 90076-65-6 HCA

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IC ICM H01M010-40

ICS H01M004-52; H01M004-50; H01M004-58

INCL 429326000; 429330000; 429339000; 429231300; 429231100; 429223000;
429221000; 429224000; 429231800

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72, 76

ST **battery** nonaq **electrolyte** extended temp range

IT Electrochromic devices
Sensors
(**electrolyte**; nonaq. **electrolytes** having
extended temp. range for **battery** applications)

IT Secondary **batteries**
(lithium; nonaq. **electrolytes** having extended temp.
range for **battery** applications)

IT **Battery electrolytes**
Electrolytic capacitors
Fuel cell **electrolytes**
Ionic conductivity
(nonaq. **electrolytes** having extended temp. range for
battery applications)

IT Carbonaceous materials (technological products)
Coke
Esters, uses
Ethers, uses
(nonaq. **electrolytes** having extended temp. range for
battery applications)

IT Sulfonic acids, uses
(perfluoro, lithium salt; nonaq. **electrolytes** having
extended temp. range for **battery** applications)

IT Perfluoro compounds
(sulfonic acids, lithium salt; nonaq. **electrolytes**
having extended temp. range for **battery** applications)

IT 96-49-1, Ethylene **carbonate** 105-58-8, Diethyl
carbonate 108-32-7, Propylene **carbonate**
110-67-8, 3-Methoxypropionitrile 463-79-6D, Carbonic acid,
ester, cyclic 463-79-6D, Carbonic acid, ester, linear 616-38-6,
Dimethyl **carbonate** 623-53-0, Ethyl methyl
carbonate 1001-55-4, 2-Acetoxyacetonitrile 1656-48-0
1738-36-9, Methoxyacetonitrile **2141-62-0**,
3-Ethoxypropionitrile 7782-42-5, Graphite, uses **7791-03-9**
, Lithium perchlorate 12031-65-1, Lithium nickel oxide (LiNiO₂)
12057-17-9, Lithium manganese oxide (LiMn₂O₄) 12190-79-3, Cobalt
lithium oxide (CoLiO₂) **14283-07-9**, Lithium
tetrafluoroborate **15365-14-7**, Iron lithium phosphate
felpo₄ 18804-04-1, uses **21324-40-3**, Lithium
hexafluorophosphate **29935-35-1**, Lithium hexafluoroarsenate
56756-91-3 62957-60-2, Ethoxyacetonitrile **90076-65-6**
260362-83-2 311346-25-5, Cobalt lithium nickel oxide
(Co_{0.1}-0.9LiNi_{0.1}-0.9O₂) 852995-04-1

(nonaq. **electrolytes** having extended temp. range for
battery applications)

L48 ANSWER 2 OF 10 HCA COPYRIGHT 2007 ACS on STN

135:21865 Fabrication of Solid-State Dye-Sensitized TiO₂ Solar

Cell Using Polymer Electrolyte. Matsumoto,
Masamitsu; Wada, Yuji; Kitamura, Takayuki; Shigaki, Kouichiro;
Inoue, Teruhisa; Ikeda, Masaaki; Yanagida, Shozo (Material and Life
Science, Graduate School of Engineering, Osaka University, Suita,
Osaka, 565-0871, Japan). Bulletin of the Chemical Society of Japan,
74(2), 387-393 (English) **2001**. CODEN: BCSJA8. ISSN:
0009-2673. Publisher: Chemical Society of Japan.

AB A solid-state dye-sensitized TiO₂ solar cell has been fabricated with
a polymer **electrolyte** constructed with α -methacryloyl-[piv]-
methoxyocta(oxyethylene) or 2-(2-methoxyethoxy)ethyl acrylate as a
base polymer, α -acryloyl-[piv] -
acryloyloxyocta(oxyethylene)octa(ethyleneglycol) dimethacrylate as a
crosslinking agent and 3-methoxypropionitrile as a plasticizer.
The polymer is in-situ polymd. at the porous TiO₂ film by photo-
irradn. and the resulting film is immersed into the liq. **electrolyte**
in order to introduce the **electrolyte** to the polymer phase. The
cond. of the polymer **electrolyte** reached 2.67 mS/cm. The energy
conversion efficiency of the solid-state cell was 2.62% under irradn.
of simulated sunlight (AM 1.5, 1 kW/m²), achieving 86.4% of the cell
efficiency using the liq. **electrolyte**.

IT **342807-86-7 342807-87-8 342807-88-9**

(fabrication of solid-state dye-sensitized titania solar
cell using polymer **electrolyte**)

RN 342807-86-7 HCA

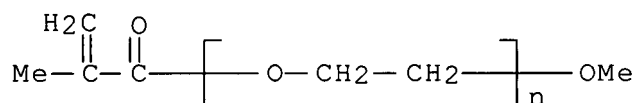
CN Propanenitrile, 3-methoxy-, polymer with α -(2-methyl-1-oxo-2-
propenyl)- ω -methoxypoly(oxy-1,2-ethanediyl) and
 α -(2-methyl-1-oxo-2-propenyl)- ω -[(2-methyl-1-oxo-2-
propenyl)oxy]poly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

CM 1

CRN 26915-72-0

CMF (C₂ H₄ O)_n C₅ H₈ O₂

CCI PMS

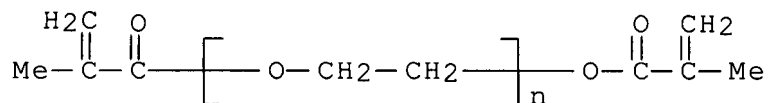


CM 2

CRN 25852-47-5

CMF (C2 H4 O)_n C8 H10 O3

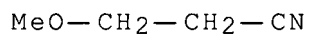
CCI PMS



CM 3

CRN 110-67-8

CMF C4 H7 N O



RN 342807-87-8 HCA

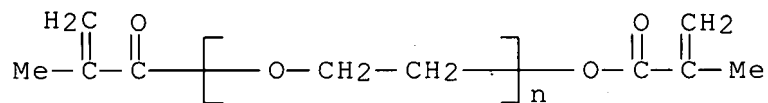
CN 2-Propenoic acid, 2-(2-methoxyethoxy)ethyl ester, polymer with 3-methoxypropanenitrile and α -(2-methyl-1-oxo-2-propenyl)- ω -[(2-methyl-1-oxo-2-propenyl)oxy]poly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

CM 1

CRN 25852-47-5

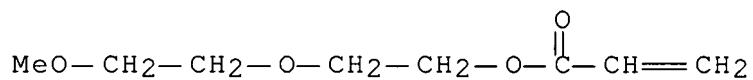
CMF (C2 H4 O)_n C8 H10 O3

CCI PMS



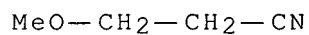
CM 2

CRN 7328-18-9
CMF C8 H14 O4



CM 3

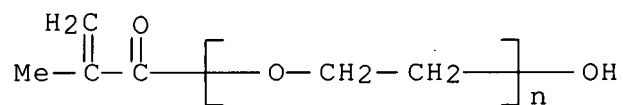
CRN 110-67-8
CMF C4 H7 N O



RN 342807-88-9 HCA
CN Propanenitrile, 3-methoxy-, polymer with α -(2-methyl-1-oxo-2-propenyl)- ω -hydroxypoly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

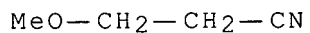
CM 1

CRN 25736-86-1
CMF (C2 H4 O)_n C4 H6 O2
CCI PMS



CM 2

CRN 110-67-8
CMF C4 H7 N O



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38, 72, 76

ST solid dye sensitized titania solar cell; polymer **electrolyte**
 solar **cell** sensitized titania

IT Photoelectrochemical cells
 Polymer **electrolytes**
 (fabrication of solid-state dye-sensitized titania solar
cell using polymer **electrolyte**)

IT 9016-69-7 9065-89-8 13463-67-7, Titania, uses 108927-94-2
 131681-30-6 **342807-86-7 342807-87-8**
342807-88-9
 (fabrication of solid-state dye-sensitized titania solar
cell using polymer **electrolyte**)

L48 ANSWER 3 OF 10 HCA COPYRIGHT 2007 ACS on STN

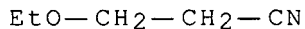
133:275273 **Electrolyte** solutions and **electrolytic**
 capacitors using thereof. Tamamitsu, Kenji (Nippon Chemi-Con Corp.,
 Japan). Jpn. Kokai Tokkyo Koho JP 2000269088 A **20000929**,
 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-75360
 19990319.

AB The **electrolytic** soln. for the capacitors comprise a non-hydrolyzing
 solvent at pH>7, quaternized cyclic ammonium salt, and/or a
 quaternary ammonium salt. The compns. in the **electrolyte** soln. does
 not require regeneration of leaked liq. such as quaternized ammonium
 salts.

IT **2141-62-0**, 3-Ethoxypropionitrile
 (**electrolyte** solns. and **electrolytic**
 capacitors using thereof)

RN 2141-62-0 HCA

CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)



IC ICM H01G009-035

CC 76-10 (Electric Phenomena)
 Section cross-reference(s): 72

ST cyclic quaternary ammonium salt **electrolyte** capacitor

IT **Electrolytic** capacitors
 (**electrolyte** solns. and **electrolytic**
 capacitors using thereof)

IT Solvents

(non-hydrolyzing in base soln.; **electrolyte** solns. and **electrolytic** capacitors using thereof)

IT Quaternary ammonium compounds, properties
(salt, cyclic; **electrolyte** solns. and **electrolytic** capacitors using thereof)

IT **Electrolytes**
(soln.; **electrolyte** solns. and **electrolytic** capacitors using thereof)

IT 75-05-8, Acetonitrile, properties 75-52-5, Nitromethane, properties 110-67-8, 3-Methoxypropionitrile 126-33-0, Sulfolane 872-50-4, N-Methylpyrrolidone, properties 872-93-5, 3-Methylsulfolane 1003-78-7, 2,4-Dimethylsulfolane **2141-62-0**, 3-Ethoxypropionitrile
(**electrolyte** solns. and **electrolytic** capacitors using thereof)

L48 ANSWER 4 OF 10 HCA COPYRIGHT 2007 ACS on STN

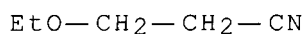
133:225554 Nonaqueous **electrolyte** solutions containing cyanoethyl compounds and nonaqueous (lithium) secondary **batteries**. Toriida, Masahiro; Omi, Katsuhiko; Tan, Hiroaki (Mitsui Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000243444 A **20000908**, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-41104 19990219.

AB The solns. are nonaq. solvents contg. RO(R1O)_nCH₂CH₂CN (R = H, C1-10 hydrocarbon, cyanoethyl; R1 = C1-4 alkylene; n = integer or 0-30) and **electrolytes**. The solns. may also contain linear carbonate esters and/or cyclic carbonate esters given in Markush structures. Secondary **batteries**, esp. lithium ion **batteries**, comprising the **electrolyte** solns. are also claimed. **Batteries** with excellent charge-discharge characteristics and high performance, under loaded conditions and low-temp., are obtained.

IT **2141-62-0**
(secondary (lithium) **batteries** comprising of nonaq. solvents contg. cyanoethyl compds.)

RN 2141-62-0 HCA

CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)



IC ICM H01M010-40
ICS H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium secondary **battery** nonaq **electrolyte**;
electrolyte soln cyanoethyl additive secondary

battery; cyclic carbonate nonaq **electrolyte**
secondary **battery**; linear carbonate nonaq
electrolyte secondary **battery**; carbonate nonaq
electrolyte secondary **battery**

- IT Secondary **batteries**
(lithium; secondary (lithium) **batteries** comprising of
nonaq. solvents contg. cyanoethyl compds.)
- IT **Battery electrolytes**
(secondary (lithium) **batteries** comprising of nonaq.
solvents contg. cyanoethyl compds.)
- IT Lithium alloy, base
(anode; secondary (lithium) **batteries** comprising of
nonaq. solvents contg. cyanoethyl compds.)
- IT 12190-79-3, HLC 21
(HLC 21, cathode; secondary (lithium) **batteries**
comprising of nonaq. solvents contg. cyanoethyl compds.)
- IT 7439-93-2, Lithium, uses 7440-44-0, MCMB 6-28, uses
(anode; secondary (lithium) **batteries** comprising of
nonaq. solvents contg. cyanoethyl compds.)
- IT 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
110-67-8 616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl
carbonate 1656-48-0, Bis(2-cyanoethyl) ether **2141-62-0**
3386-87-6 4437-85-8, Butylene carbonate 35633-50-2
(secondary (lithium) **batteries** comprising of nonaq.
solvents contg. cyanoethyl compds.)

L48 ANSWER 5 OF 10 HCA COPYRIGHT 2007 ACS on STN

132:210209 Secondary nonaqueous-**electrolyte batteries**

with **electrolytes** containing cyanoethoxy compounds.

Kobayashi, Aya; Izuchi, Shuichi (Yuasa Battery Co., Ltd., Japan).

Jpn. Kokai Tokkyo Koho JP 2000077096 A **20000314**, 5 pp.

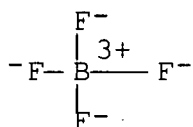
(Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-244674 19980831.

- AB Claimed **batteries** are equipped with **electrolytes** contg. cyanoethoxy
compds. $R(OC_2H_4CN)_n$ ($n = 1-4$; $R = C_mH_{2m+2-n}$, $C_mH_{2m+2-n}(OC_2H_4)_p$,
 $C_mH_{2m+2-n}CO$, or $C_mH_{2m+2-n}OCO$; $m = 1-3$; $p = 1-4$) as nonaq. solvents
for Li salts. Optionally, the **batteries** are equipped with gelled
polymer **electrolytes**. The **batteries** have long cycle life at low
temp.

- IT **14283-07-9**, Lithium tetrafluoroborate
(**electrolytes**; nonaq. **batteries** with
electrolytes contg. cyanoethoxy compds. for long cycle
life at low temp.)

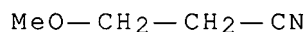
RN 14283-07-9 HCA

CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)

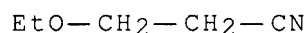


● Li⁺

IT 110-67-8 2141-62-0
 (solvents; nonaq. **batteries** with **electrolytes**
 contg. cyanoethoxy compds. for long cycle life at low temp.)
 RN 110-67-8 HCA
 CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



RN 2141-62-0 HCA
 CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)



IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST cyanoethoxy compd nonaq **electrolyte** solvent
battery; lithium **battery electrolyte**
 solvent cyanoethoxy compd
 IT Secondary **batteries**
 (lithium; nonaq. **batteries** with **electrolytes**
 contg. cyanoethoxy compds. for long cycle life at low temp.)
 IT **Battery electrolytes**
 (nonaq. **batteries** with **electrolytes** contg.
 cyanoethoxy compds. for long cycle life at low temp.)
 IT Polyoxyalkylenes, uses
 (trifunctional acrylates, lithium complexes, gelled
electrolytes; nonaq. **batteries** with
electrolytes contg. cyanoethoxy compds. for long cycle
 life at low temp.)
 IT 14283-07-9, Lithium tetrafluoroborate
 (**electrolytes**; nonaq. **batteries** with

electrolytes contg. cyanoethoxy compds. for long cycle life at low temp.)

IT 25322-68-3D, Polyethylene glycol, trifunctional acrylates, lithium complexes
(gelled **electrolytes**; nonaq. **batteries** with **electrolytes** contg. cyanoethoxy compds. for long cycle life at low temp.)

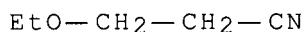
IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene **carbonate**
108-32-7, Propylene **carbonate** **110-67-8**
1656-48-0, Bis-2-cyanoethyl ether **2141-62-0** 3386-87-6
5325-93-9 20597-73-3 32846-35-8, Bis 2-cyanoethyl **carbonate** 35633-51-3 260362-83-2
(solvents; nonaq. **batteries** with **electrolytes** contg. cyanoethoxy compds. for long cycle life at low temp.)

L48 ANSWER 6 OF 10 HCA COPYRIGHT 2007 ACS on STN
131:76169 Organic **electrolyte** solutions for lithium **batteries** and capacitors. Nishikawa, Satoshi (Sunstar Engineering, Inc., Japan; Uni Sunstar BV). Jpn. Kokai Tokkyo Koho JP 11185808 A **19990709** Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-350635 19971219.

AB The **electrolyte** solns. contain an inorg. **electrolyte** salt dissolved in a cyanoethyl compd. (RO)aR'OCH₂CH₂CN, where R = C1-4 alkyl group, R' = C1-4 alkylene or alkyl group, and a = 0 or 1.

IT **2141-62-0**
(solvents contg. cyanoethyl compds. for org. **electrolyte** solns. for lithium **batteries** and capacitors)

RN 2141-62-0 HCA
CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)



IC ICM H01M010-40
ICS H01G009-038; H01G009-035

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76

ST lithium **battery electrolyte** solvent cyanoethyl compd; capacitor **electrolyte** solvent cyanoethyl compd

IT Capacitors
(double layer; solvents contg. cyanoethyl compds. for org. **electrolyte** solns. for lithium **batteries** and capacitors)

IT **Battery electrolytes**
(solvents contg. cyanoethyl compds. for org. **electrolyte**

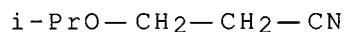
solns. for lithium **batteries** and capacitors)
IT 110-67-8 1656-48-0, Bis(2-cyanoethyl)ether **2141-62-0**
3386-87-6 228720-62-5
(solvents contg. cyanoethyl compds. for org. **electrolyte**
solns. for lithium **batteries** and capacitors)

L48 ANSWER 7 OF 10 HCA COPYRIGHT 2007 ACS on STN
130:252076 Preparation of alcohol cyanoethyl ethers for lithium
batteries and organic **electrolytic** solutions
containing them. Nishikawa, Satoshi (Sunstar Engineering, Inc.,
Japan; Uni Sunstar Bv). Jpn. Kokai Tokkyo Koho JP 11080112 A
19990326 Heisei, 9 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 1997-245178 19970910.

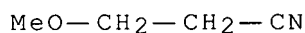
AB (R1O)aR2(OCH2CH2CN)b (I; R1 = C11-3 alkyl; R2 = residue of alcs.
having 1-4 OH groups; a = 0-3; b = 1-4; a + b = 1-4) are prepd. by
cyanoethylation of alcs. with acrylonitrile (II) in the presence of
≥1 selected from (a) LiOH and (b) Li metal, Li alkoxides, compds.
comprising Li and active methylene compds. such as Li acetylacetonate
and in the absence of H2O. The org. **electrolyte** solns. for Li
batteries or Li ion secondary **batteries** comprise I and Li salts
dissolved therein. The **electrolyte** solns. may contain aprotic polar
compds. This method gives I without discoloration due to polymn. of
II. II was added dropwise to a mixt. of ethylene glycol and LiOH.H2O
at 40-0° over 2 h, and the reaction mixt. was further stirred at 40-
50° for 3 h to give ethylene glycol bis(2-cyanoethyl) ether (III)
with purity ≥99.5%. LiClO4 was dissolved in III to give an
electrolyte soln. showing cond. $2.7 \times 10^{-3} \text{ S}\cdot\text{cm}^{-1}$.

IT **110-47-4P 110-67-8P**, 2-Cyanoethyl methyl ether
2141-62-0P 51299-82-2P
(prepn. of (poly)alc. cyanoethyl ethers as **battery**
electrolytes by LiOH-catalyzed reaction of polyols and
acrylonitrile)

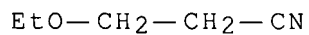
RN 110-47-4 HCA
CN Propanenitrile, 3-(1-methylethoxy)- (CA INDEX NAME)



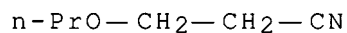
RN 110-67-8 HCA
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



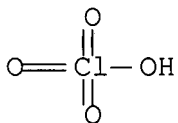
RN 2141-62-0 HCA
CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)



RN 51299-82-2 HCA
CN Propanenitrile, 3-propoxy- (9CI) (CA INDEX NAME)

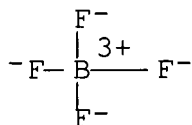


IT **7791-03-9**, Lithium perchlorate **14283-07-9**
(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)
RN 7791-03-9 HCA
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)



● Li

RN 14283-07-9 HCA
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



● Li⁺

IC ICM C07C255-13
ICS B01J023-04; C07C253-30; H01M010-40; C07B061-00

CC 23-19 (Aliphatic Compounds)
Section cross-reference(s): 52

ST polyol cyanoethyl ether prepn **battery electrolyte**
; alc cyanoethyl ether prepn **battery electrolyte**
; acrylonitrile cyanoethylation polyol lithium hydroxide catalyst;
ethylene glycol cyanoethyl ether **battery electrolyte**

IT Polar solvents
Polar solvents
(aprotic; prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT Cyanoethylation
Cyanoethylation
(catalysts; prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT Ethylation catalysts
Ethylation catalysts
(cyanoethylation catalysts; prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT Primary **batteries**
Secondary **batteries**
(lithium; prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT Alcohols, reactions
(polyhydric; prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT **Battery electrolytes**
(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT Alcohols, reactions
Glycols, reactions
Polyoxyalkylenes, reactions
(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT 7439-93-2, Lithium, uses 18115-70-3, Lithium acetylacetonate, uses
(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and

- acrylonitrile)
- IT 112-27-6P
(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)
- IT **110-47-4P 110-67-8P**, 2-Cyanoethyl methyl ether
2141-62-0P 2465-91-0P 2465-93-2P 3386-87-6P, Ethylene glycol bis(2-cyanoethyl) ether 6959-71-3P 9003-07-0DP, Polypropylene, triol derivs., bis(2-cyanoethyl)ether 16792-83-9P, Propylene glycol bis(2-cyanoethyl) ether 22397-30-4P 22397-31-5P, Diethylene glycol bis(2-cyanoethyl) ether 25265-71-8DP, Dipropylene glycol, ether with 2-cyanoethyl and Me 35633-45-5P 35633-50-2P 35633-51-3P 39377-81-6P 39927-06-5P, Polyethylene glycol bis(2-cyanoethyl) ether **51299-82-2P** 57741-46-5P, Triethylene glycol bis(2-cyanoethyl) ether 59113-36-9DP, Diglycerin, ether with tetrakis(2-cyanoethyl) 61579-08-6P 180316-31-8P, 2,5,8,11-Tetraoxatetradecane-14-nitrile 221628-60-0P 221628-62-2P 221628-64-4P
(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)
- IT 56-81-5, 1,2,3-Propanetriol, reactions 57-55-6, 1,2-Propanediol, reactions 64-17-5, Ethanol, reactions 67-56-1, Methanol, reactions 67-63-0, Isopropanol, reactions 71-23-8, n-Propanol, reactions 71-36-3, n-Butanol, reactions 102-71-6, Triethanolamine, reactions 107-13-1, 2-Propenenitrile, reactions 107-21-1, 1,2-Ethanediol, reactions 109-86-4, Ethylene glycol monomethyl ether 110-80-5, Ethylene glycol monoethyl ether 111-46-6, Diethylene glycol, reactions 111-77-3, Diethylene glycol monomethyl ether 112-35-6, Triethylene glycol monomethyl ether 115-77-5, reactions 122-20-3, Triisopropanolamine 1320-67-8, Propylene glycol monomethyl ether 4439-20-7 25265-71-8, Dipropylene glycol 25322-68-3 25322-69-4, Polypropylene glycol 25618-55-7 34590-94-8, Dipropylene glycol monomethyl ether 52125-53-8, Propylene glycol monoethyl ether 59113-36-9, Diglycerin
(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)
- IT **7791-03-9**, Lithium perchlorate **14283-07-9**
(prepn. of (poly)alc. cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)
- IT 1310-65-2, Lithium hydroxide
(prepn. of polyol cyanoethyl ethers as **battery electrolytes** by LiOH-catalyzed reaction of polyols and acrylonitrile)

IT 96-49-1, Ethylene **carbonate**
(solvent; prepn. of (poly)alc. cyanoethyl ethers as
battery electrolytes by LiOH-catalyzed reaction
of polyols and acrylonitrile)

L48 ANSWER 8 OF 10 HCA COPYRIGHT 2007 ACS on STN

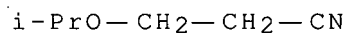
107:189077 Capacitor **electrolyte**. Goshima, Yujiro; Tamura,
Akira; Saotome, Minoru (Nippon Shokubai Kagaku Kogyo Co., Ltd.,
Japan). Jpn. Kokai Tokkyo Koho JP 62084508 A **19870418**
Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP
1985-222751 19851008.

AB Nitriles are used as the main solvents in the title soln. Optionally,
NCCH₂CH₂(OCH₂CH₂)_nOR (R = H, C1-4 alkyl, CH₂CH₂CN, CH₂COR₁; R₁ = C1-4
alkyl; n = 0-3) and NCCH₂CO₂R₂ (R₂ = C2-4 alkyl) are used as the
nitriles. The soln. is usable at a wide temp. range (from -70° to
+190°). Ethylene cyanohydrin was used as the main solvent in a
capacitor **electrolyte**.

IT **110-47-4**, 3-Isopropoxypropionitrile **2141-62-0**,
3-Ethoxypropionitrile **51299-82-2**, 3-Propoxypropionitrile
(**electrolytes** contg., for **electrolytic**
capacitors)

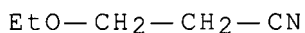
RN 110-47-4 HCA

CN Propanenitrile, 3-(1-methylethoxy)- (CA INDEX NAME)



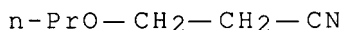
RN 2141-62-0 HCA

CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)



RN 51299-82-2 HCA

CN Propanenitrile, 3-propoxy- (9CI) (CA INDEX NAME)



IC ICM H01G009-02

CC 76-10 (Electric Phenomena)

ST capacitor elec **electrolyte** nitrile
 IT Nitriles, uses and miscellaneous
 (solvents, in **electrolytes** for **electrolytic**
 capacitors)
 IT Electric capacitors
 (**electrolytic, electrolytes** contg. nitrile
 solvents in)
 IT 105-56-6, Ethyl cyanoacetate 109-78-4, Ethylene cyanohydrin
110-47-4, 3-Isopropoxypropionitrile 1116-98-9, tert-Butyl
 cyanoacetate 1656-48-0, Bis(propionitrile) ether **2141-62-0**
 , 3-Ethoxypropionitrile 3386-87-6 5459-58-5, n-Butyl
 cyanoacetate 6959-71-3 10143-54-1, Diethylene glycol
 mono(propionitrile) ether 13361-30-3, Isopropyl cyanoacetate
 14447-15-5, Propyl cyanoacetate 24298-26-8, Ethylene glycol
 mono(propionitrile) ether 35633-50-2, 3-(2-
 Methoxyethoxy)propionitrile 35633-51-3, 3-(2-
 Ethoxyethoxy)propionitrile **51299-82-2**,
 3-Propoxypropionitrile 99764-73-5, 3-tert-Butyloxypropionitrile
 (**electrolytes** contg., for **electrolytic**
 capacitors)

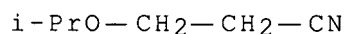
L48 ANSWER 9 OF 10 HCA COPYRIGHT 2007 ACS on STN

61:81607 Original Reference No. 61:14188c-e Electrochemical behavior of
 copper ions and silver ion in hydracrylonitrile and some related
 nitriles. Farha, Floyd, Jr.; Iwamoto, Reynold T. (Univ. of Kansas,
 Lawrence). Journal of Electroanalytical Chemistry (1959-1966),
 8(1), 55-64 (Unavailable) **1964**. CODEN: JEACAX. ISSN:
 0368-1874.

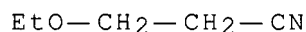
AB In hydracrylonitrile (I), Cu⁺⁺ is solvated by the C:N group, whereas
 in 1:1 alc.-nitrile mixts., it is solvated by the OH group. This
 phenomenon is explained on the basis that I (dielec. const. 65), 1:1
 EtOH-acetonitrile (dielec. const. 32), and 1:1 BuOH-propionitrile are
 polar solvent systems and thus favor the more polar solvated form of
 Cu⁺⁺. Thus, in I, the solvent mols. are oriented with the nitrile
 group attached to Cu⁺⁺ and the OH group sticking out and forming a
 polar outer sheath; and in 1:1 alc.-nitrile mixt., the alc. rather
 than the nitrile mol. is in the coordination sphere. The nitrile-
 solvated Cu⁺⁺ with an outer sheath consisting only of alkyl groups
 behaves like a nonpolar solute. The Cu ions are solvated by the
 trans conformer of I, 3-butenonitrile, and alkoxypropionitriles since
 there is an absence of any solvent effect on the potentials of the Cu
 couples in these solvents. The electrochem. redn. of Ag⁺ in I and
 related nitriles is similar to that of Cu⁺ except for the fact that
 Ag⁺ is reduced at potentials more pos. than Cu⁺.

IT **110-47-4**, Propionitrile, 3-isopropoxy- **2141-62-0**,
 Propionitrile, 3-ethoxy-
 (solvation of Cu and Ag in)

RN 110-47-4 HCA
CN Propanenitrile, 3-(1-methylethoxy)- (CA INDEX NAME)



RN 2141-62-0 HCA
CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)



CC 15 (Electrochemistry)
IT 7440-22-4, Silver
(redn. (**electrolytic**) of, in nitrile solvents)
IT 109-75-1, 3-Butenenitrile **110-47-4**, Propionitrile,
3-isopropoxy- 110-67-8, Propionitrile, 3-methoxy- 542-76-7,
Propionitrile, 3-chloro- **2141-62-0**, Propionitrile,
3-ethoxy-
(solvation of Cu and Ag in)

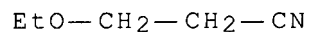
L48 ANSWER 10 OF 10 HCA COPYRIGHT 2007 ACS on STN

55:143506 Original Reference No. 55:27044c-d Conductometric study of
the reaction of some nitriles with hydrogen chloride. Zil'berman,
E. N.; Ivcher, T. S.; Perepletchikova, E. M. Zhurnal Obshchei
Khimii, 31, 2037-9 (Unavailable) **1961**. CODEN: ZOKHA4.
ISSN: 0044-460X.

AB cf. Klages, et al., CA 54, 2241e; 55, 83452. Conductivity isotherms
at 25° were presented for solns. of dry HCl in adiponitrile, PhCN,
ClCH₂CH₂CN, ClCH₂CHClCN, and EtOCH₂CH₂CN. In all solns. the values
of cond. rose in time and reached a max. value, while in the initial
period a min. was observed. The results indicated that such solns.
were equil. systems contg. various unstable compds. not subject to
electrolytic dissocn. themselves.

IT **2141-62-0**, Propionitrile, 3-ethoxy-
(reaction with HCl)

RN 2141-62-0 HCA
CN Propanenitrile, 3-ethoxy- (CA INDEX NAME)



CC 10B (Organic Chemistry: Aliphatic Compounds)
IT 100-47-0, Benzonitrile 111-69-3, Adiponitrile 542-76-7,
Propionitrile, 3-chloro- **2141-62-0**, Propionitrile,
3-ethoxy- 2601-89-0, Propionitrile, 2,3-dichloro-
(reaction with HCl)

=> D L49 1-7 CBIB ABS HITSTR HITIND

L49 ANSWER 1 OF 7 HCA COPYRIGHT 2007 ACS on STN

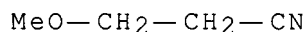
140:294908 An improved electrochromic or electrodeposition display and novel process for their manufacture. Liang, Rong-chang; Hou, Jack; Ananthavel, Sundaravel P. (Sipix Imaging, Inc., USA). PCT Int. Appl. WO 2004025356 A2 20040325, 37 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2003-US28540 20030910. PRIORITY: US 2002-409833P 20020910.

AB An electrochromic or electrodeposition display is described comprising a plurality of cells enclosed between the two electrodes, each of the cells comprising (i) surrounding partition walls (microcup) , (ii) an electrochromic fluid or **electrolytic** fluid (e.g., silver nitrate in a polymer matrix) filled therein, and (iii) a polymeric sealing layer which encloses the electrochromic fluid or **electrolytic** fluid within each cell and sealingly adheres to the surface of the partition walls. The display device may also have a top electrode plate and a bottom electrode plate, at least one of which is transparent. A method of prepg. an electrochromic or electrodeposition display is also described entailing (a) embossing a thermoplastic or thermoset precursor layer with a pre-patterned male mold; (b) hardening the thermoplastics or thermoset precursor layer; (c) releasing the mold from the thermoplastic or thermoset precursor layer; (d) filling the thus-formed array of microcups with an electrochromic or electrodeposition fluid; and (e) sealing the filled microcups.

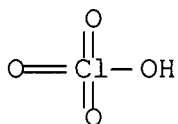
IT **110-67-8**, 3-Methoxypropionitrile.
(electrochromic solvent; electrochromic or electrodeposition display and fabrication method)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IT 7791-03-9, Lithium perchlorate
 (electrolyte; electrochromic or electrodeposition
 display and fabrication method)
 RN 7791-03-9 HCA
 CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)



● Li

IC ICM G02F001-00
 CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and
 Other Reprographic Processes)
 Section cross-reference(s): 72, 76
 IT Gelatins, uses
 Polyoxyalkylenes, uses
 (electrolytic fluid; electrochromic or
 electrodeposition display and fabrication method)
 IT 931-40-8, Glycerin carbonate
 (Glycerin carbonate, non-aq. solvent; electrochromic or
 electrodeposition display and fabrication method)
 IT 110-67-8, 3-Methoxypropionitrile.
 (electrochromic solvent; electrochromic or electrodeposition
 display and fabrication method)
 IT 7791-03-9, Lithium perchlorate 33454-82-9, Lithium
 triflate 35895-70-6, Tetrabutylammonium triflate
 (electrolyte; electrochromic or electrodeposition
 display and fabrication method)
 IT 7761-88-8, Silver nitrate, uses 9000-01-5, Gum Arabic 9003-39-8,
 Polyvinylpyrrolidone 9004-62-0, Hydroxyethyl cellulose
 9004-64-2, Hydroxypropyl cellulose 9004-67-5, Methyl cellulose
 25322-68-3, Poly(ethylene oxide)
 (electrolytic fluid; electrochromic or
 electrodeposition display and fabrication method)
 IT 67-68-5, Dimethylsulfoxide, uses 68-12-2, Dimethyl formamide, uses

75-05-8, Acetonitrile, uses 96-48-0, γ -Butyrolactone
 108-32-7, Propylene **carbonate** 109-86-4, 2-Methoxyethanol
 109-87-5, Dimethoxymethane 110-80-5, 2-Ethoxyethanol 127-19-5,
 N, N-Dimethylacetamide 617-84-5, Diethyl formamide 872-50-4,
 N-Methylpyrrolidone, uses 1187-58-2, N-Methylpropionic acid amide
 4553-62-2, 2-Methylglutaronitrile
 (non-aq. solvent; electrochromic or electrodeposition display and
 fabrication method)

L49 ANSWER 2 OF 7 HCA COPYRIGHT 2007 ACS on STN

132:183113 Secondary nonaqueous **electrolyte batteries**

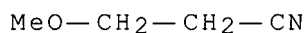
. Tabuchi, Toru; Aoki, Takashi; Nakamitsu, Kazuhiro; Mizutani,
 Minoru (Japan Storage Battery Co., Ltd., Japan; GS Melcotec K. K.).
 Jpn. Kokai Tokkyo Koho JP 2000067913 A **20000303**, 7 pp.
 (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-305833 19981027.
 PRIORITY: JP 1998-159629 19980608.

AB The **batteries** use a nonaq. Li salt **electrolyte** soln. contg. a cyano
 group contg. ether or glycol and a **carbonate** ester.

IT **110-67-8 21324-40-3**, Lithium hexafluorophosphate
 (**electrolyte** solvent mixts. contg. cyano ethers or
 cyano glycols and **carbonate** esters for secondary
 lithium **batteries**)

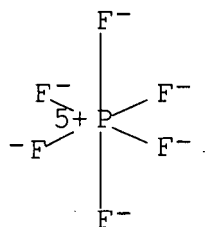
RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



RN 21324-40-3 HCA

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

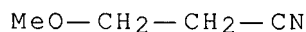
IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST secondary lithium **battery electrolyte** soln
 compn; lithium **battery electrolyte** cyano ether
carbonate ester; cyano glycol **carbonate** ester
 lithium **battery electrolyte**
 IT **Battery electrolytes**
 (electrolyte solvent mixts. contg. cyano ethers or
 cyano glycols and **carbonate** esters for secondary
 lithium **batteries**)
 IT 96-49-1, Ethylene **carbonate** 110-67-8 623-53-0,
 Ethyl methyl **carbonate** 3386-87-6 21324-40-3,
 Lithium hexafluorophosphate
 (electrolyte solvent mixts. contg. cyano ethers or
 cyano glycols and **carbonate** esters for secondary
 lithium **batteries**)

L49 ANSWER 3 OF 7 HCA COPYRIGHT 2007 ACS on STN
 131:250338 Novel electrochromic devices based on complementary
 nanocrystalline TiO₂ and WO₃ thin films. Bonhote, Pierre; Gogniat,
 Eric; Gratzel, Michael; Ashrit, P. V. (Laboratoire de photonique et
 interfaces, Departement de Chimie, Ecole Polytechnique Federale de
 Lausanne, Lausanne, CH-1015, Switz.). Thin Solid Films, 350(1,2),
 269-275 (English) 1999. CODEN: THSFAP. ISSN: 0040-6090.
 Publisher: Elsevier Science S.A..

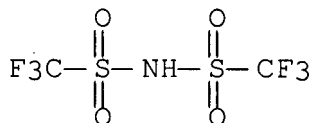
AB Electrochromic devices were elaborated based on two complementary
 electrodes made of a nanocryst. metal oxide thin film deposited on
 conducting glass. The first electrode holds a 5 µm thick nanocryst.
 TiO₂ film derivatized by a monolayer of a phosphonated triarylamine
 which can be rapidly oxidized by electron transfer to the conducting
 support followed by charge percolation inside the monolayer. The
 oxidn. is accompanied by a blue coloration due to the absorption band
 at 730 nm of the stable triarylamminium radical cation. The second
 electrode bears a 0.2 µm thick nanocryst. WO₃ film which turns from
 colorless to blue by redn. and lithium ion insertion. The former
 electrode reaches an absorbance of at least 3 between 700 and 730 nm
 after full oxidn. (16 mC/cm²) at 1.0 V vs. NHE while for the second,
 complete redn. at - 1.3 V (74 mC/cm²) leads to A = 2.4 at 774 nm. An
 electrochromic device comprising both electrodes sepd. by an
electrolytic soln. of 0.1 Li⁺ in 4,7-dioxaoctanitrile reaches an
 absorbance of 2.2 at 700 nm, 4 s after a voltage step to 1.5 V. The
 system was shown to sustain at least 14,400 coloration-discoloration
 cycles without degradn.

IT 110-67-8, 3-Methoxypropionitrile 90076-65-6,
 Lithium bis(trifluoromethylsulfonyl)imide
 (novel electrochromic devices based on complementary nanocryst.
 TiO₂ and WO₃ thin films)

RN 110-67-8 HCA
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



RN 90076-65-6 HCA
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

CC 74-9 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 66, 72
IT 75-05-8, Acetonitrile, uses **110-67-8**, 3-Methoxypropionitrile **90076-65-6**, Lithium bis(trifluoromethylsulfonyl)imide 174899-82-2, 1-Ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide (novel electrochromic devices based on complementary nanocryst. TiO₂ and WO₃ thin films)

L49 ANSWER 4 OF 7 HCA COPYRIGHT 2007 ACS on STN

126:133588 Nonaqueous **electrolyte batteries** using **electrolytes** containing self discharge inhibitors. Jinno, Maruo; Uehara, Mayumi; Sakurai, Atsushi; Nishio, Koji; Saito, Toshihiko (Sanyo Denki Kk, Japan). Jpn. Kokai Tokkyo Koho JP 08321312 A **19961203** Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-150844 19950524.

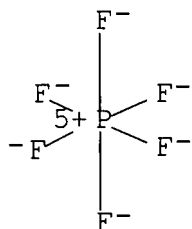
AB Li **batteries** use **electrolytes** contg. LiCF₃SO₃ or LiPF₆ dissolved in high dielec. const. solvent selected from ethylene **carbonate**, propylene **carbonate**, and butylene **carbonate**; where the **electrolytes** contain 1-20 vol.% additive selected from triethylamine, n-butylamine, aniline, tri-Me hydroxylamine, 1-dimethylamino-2-methoxy ethane, acetonitrile, acrylonitrile, 3-methoxy propionitrile, benzonitrile, nitromethane, nitroethane, N,N-dimethylacetamide, N,N-

dimethylformamide, formamide, N-methyl-2-pyrrolidone, N,N'-dimethyl imidazolidinone, isoxazole, 3,5-di-Me isoxazole, 3-methyl-2-oxazolidone, 1,2,3-oxadiazole, N-Me morpholine, di-Me sulfide, Et Me sulfide, 2-Me thiophene, 1-butane thiol, benzenethiol, di-Me sulfate, di-Et sulfate, di-Me sulfite, di-Et sulfite, butadienesulfone, 3-Me sulfolene, 1,4-thioxane, phenoxathiin, 1,4-thiazine, thiomorpholine, pyridine, 1,3-dimethyl-2-imidazolidinone, DMSO, di-Me sulfone, Me Et sulfonate, and di-Me sulfinite. The **electrolytes** may contain 1,2-dimethoxyethane. Since the additives react with Li in anodes and the solvents and the solutes in the **electrolytes** to form coatings on the anodes for prevention of the reaction between the **electrolytes** and the anodes, the **batteries** have improved storage property. These **batteries** have long shelf life.

IT 21324-40-3, Lithium hexafluorophosphate
(nonaq. **electrolyte** solns. contg. self discharge inhibitors for lithium **batteries**)

RN 21324-40-3 HCA

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

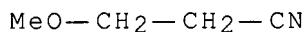


● Li⁺

IT 110-67-8, 3-Methoxypropionitrile
(self discharge inhibitors in nonaq. **electrolyte** solns. for lithium **batteries**)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IC ICM H01M006-16
ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium **battery electrolyte** self discharge

inhibitor

IT **Battery electrolytes**

(self discharge inhibitors in nonaq. **electrolyte** solns.
for lithium **batteries**)

IT 7439-93-2, Lithium, uses **21324-40-3**, Lithium
hexafluorophosphate 33454-82-9, Lithium trifluoromethanesulfonate
(nonaq. **electrolyte** solns. contg. self discharge
inhibitors for lithium **batteries**)

IT 62-53-3, Aniline, uses 64-67-5, Diethyl sulfate 67-68-5,
Dimethylsulfoxide, uses 67-71-0, Dimethylsulfone 68-12-2,
N,N-Dimethylformamide, uses 75-05-8, Acetonitrile, uses 75-12-7,
Formamide, uses 75-18-3, Dimethylsulfide 75-52-5, Nitromethane,
uses 77-78-1, Dimethyl sulfate 79-24-3, Nitroethane 80-73-9,
N,N'-Dimethylimidazolidinone 100-47-0, Benzonitrile, uses
107-13-1, Acrylonitrile, uses 108-98-5, Benzenethiol, uses
109-02-4, N-Methylmorpholine 109-73-9, n-Butylamine, uses
109-79-5, 1-Butanethiol **110-67-8**, 3-Methoxypropionitrile
110-86-1, Pyridine, uses 121-44-8, Triethylamine, uses 123-90-0,
Thiomorpholine 127-19-5, N,N-Dimethylacetamide 262-20-4,
Phenoxathiin 288-14-2, Isoxazole 288-43-7, 1,2,3-Oxadiazole
290-56-2, 1,4-Thiazine 290-57-3, 1,4-Thiazine 300-87-8,
3,5-Dimethylisoxazole 554-14-3, 2-Methylthiophene 616-42-2,
Dimethyl sulfite 623-81-4, Diethyl sulfite 624-89-5,
Ethylmethylsulfide 666-15-9 872-50-4, N-Methyl-2-pyrrolidone,
uses 1193-10-8, 3-Methylsulfolene 1912-28-3, Methyl ethyl
sulfonate 3030-44-2 5669-39-6, Trimethylhydroxylamine
15980-15-1, 1,4-Thioxane 19836-78-3 28452-93-9, Butadienesulfone
(self discharge inhibitors in nonaq. **electrolyte** solns.
for lithium **batteries**)

IT 96-49-1, Ethylene **carbonate** 108-32-7, Propylene
carbonate 110-71-4, 1,2-Dimethoxyethane 4437-85-8,
Butylene **carbonate**
(solvents for nonaq. **electrolyte** solns. contg. self
discharge inhibitors for lithium **batteries**)

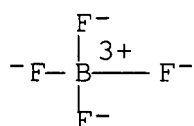
L49 ANSWER 5 OF 7 HCA COPYRIGHT 2007 ACS on STN

122:145421 Model for oxide film growth in aluminum anodization. Izotov,
V. Yu.; Maletin, Yu. A.; Koval, L. B.; Mironova, A. A.; Kozachkov,
S. G.; Nezdorovin, V. P. (V. I. Vernadsky Inst., National Acad. Sci.
Ukraine, Kiev, 252680, Ukraine). Teoreticheskaya i
Eksperimental'naya Khimiya, 30(5), 272-6 (Russian) **1994**.
CODEN: TEKHA4. ISSN: 0497-2627. Publisher: Institut Fizicheskoi
Khimii im. L. V. Pisarzhevskogo AN Ukrainy.

AB A theor. model was developed to describe the formation of amorphous
or polycryst. oxide films on the surface of Al during its
anodization. Satisfactory agreement between the model and exptl.

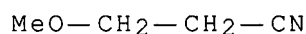
data on anodization in **electrolytes** based on various dicarboxylic acids is illustrated.

IT **14283-07-9**, Lithium tetrafluoroborate
(aluminum anodization in baths contg. various solvents and salts)
RN 14283-07-9 HCA
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



● Li⁺

IT **110-67-8**, 3-Methoxypropionitrile
(aluminum anodization in baths contg. various solvents and salts)
RN 110-67-8 HCA
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



CC 72-7 (Electrochemistry)
Section cross-reference(s): 56
IT 429-06-1, Tetraethylammonium tetrafluoroborate 1113-38-8, Ammonium oxalate 2226-88-2, Ammonium succinate **14283-07-9**, Lithium tetrafluoroborate 15967-97-2 18815-40-2, Ammonium malonate 19090-60-9, Ammonium adipate 29750-34-3, Ammonium glutarate 41606-95-5, Tetraethylammonium phthalate, uses 161204-77-9, uses
(aluminum anodization in baths contg. various solvents and salts)
IT 68-12-2, Dimethylformamide, uses 75-05-8, Acetonitrile, uses 79-16-3, N-Methylacetamide 96-48-0, γ -Butyrolactone 107-21-1, Ethylene glycol, uses 108-32-7, Propylene **carbonate 110-67-8**, 3-Methoxypropionitrile 111754-40-6, Tetraethylammonium maleate, uses
(aluminum anodization in baths contg. various solvents and salts)

L49 ANSWER 6 OF 7 HCA COPYRIGHT 2007 ACS on STN
122:18779 Electrochemical properties of organic liquid **electrolytes** based on quaternary onium salts for electrical

double-layer capacitors. Ue, Makoto; Ida, Kazuhiko; Mori, Shoichiro (Mitsubishi Petrochem. Co., Tsukuba Res. Center, Ibaraki, 300-03, Japan). Journal of the Electrochemical Society, 141(11), 2989-96 (English) **1994**. CODEN: JESOAN. ISSN: 0013-4651.

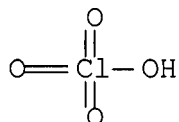
Publisher: Electrochemical Society.

AB The **electrolytic** conductivities and limiting redn. and oxidn. potentials for various org. liq. **electrolytes** based on quaternary onium salts find better **electrolytes** for elec. double-layer capacitors. An **electrolyte** composed of tetraethylammonium cation, tetrafluoroborate anion, and propylene **carbonate** solvent showed well-balanced performance of high **electrolytic** cond., a wide stable potential window and resistance to hydrolysis. Among quaternary onium salts, triethylmethyammonium, ethylmethylpyrrolidinium, and tetramethylenepyrrolidinium tetrafluoroborate salts exhibited higher **electrolytic** cond. than the conventional tetraethylammonium salt due to their much greater soly.

IT **7791-03-9**, Lithium perchlorate **14283-07-9**, Lithium tetrafluoroborate(1-) **21324-40-3**, Lithium hexafluorophosphate(1-)
(elec. cond. in various solvents for. org. **electrolyte** for double-layer capacitors)

RN 7791-03-9 HCA

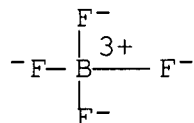
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)



● Li

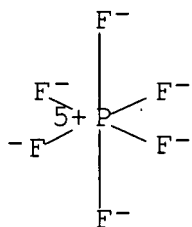
RN 14283-07-9 HCA

CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



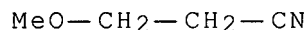
● Li⁺

RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

IT 110-67-8, 3-Methoxypropionitrile
(phys. properties and elec. cond. and limiting redn. and oxidn.
potentials in tetraethylammonium tetrafluoroborate-contg.)
RN 110-67-8 HCA
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



CC 72-2 (Electrochemistry)
Section cross-reference(s): 68, 76
ST electrochem property quaternary onium salt capacitor; org
electrolyte electrochem property capacitor;
tetraethylammonium tetrafluoroborate propylene **carbonate**
property capacitor; triethylmethyammonium ethylmethylpyrrolidinium
tetramethylenepyrrolidinium tetrafluoroborate capacitor; potential
org **electrolyte** double layer capacitor; cond org
electrolyte double layer capacitor; double layer capacitor
potential cond **electrolyte**
IT Electric conductivity and conduction
(of org. liq. **electrolytes** based on quaternary onium
salts for double-layer capacitors)
IT Phosphonium compounds
Quaternary ammonium compounds, uses
(org. liq. **electrolytes** based on quaternary onium salts
for double-layer capacitors)
IT Electric capacitors
(double-layer, org. liq. **electrolytes** based on

- quaternary onium salts for)
- IT Electric potential
(oxidn., limiting; of org. liq. **electrolytes** based on
quaternary onium salts for double-layer capacitors)
- IT Electric potential
(redn., limiting; of org. liq. **electrolytes** based on
quaternary onium salts for double-layer capacitors)
- IT 661-36-9, Tetramethylammonium tetrafluoroborate(1-) 665-49-6,
Tetraethylphosphonium tetrafluoroborate 1813-60-1,
Tetrabutylphosphonium tetrafluoroborate 15553-50-1,
Tetrahexylammonium tetrafluoroborate 24688-98-0,
Tetrapropylphosphonium tetrafluoroborate 41093-49-6 69444-47-9,
Triethylmethylammonium tetrafluoroborate 69444-48-0,
Tributylmethylammonium tetrafluoroborate 69444-49-1 69444-50-4
69444-51-5 117029-35-3 117947-85-0 117947-86-1 117947-87-2
118812-70-7, Diethyldimethylammonium tetrafluoroborate 129211-47-8
158151-18-9, Ethyltrimethylammonium tetrafluoroborate 159599-73-2
(elec. cond. and limiting redn. and oxidn. potentials in
propylene **carbonate** contg. quaternary ammonium or
phosphonium tetrafluoroborate for **electrolyte** for
double-layer capacitors)
- IT 429-06-1, Tetraethylammonium tetrafluoroborate(1-)
(elec. cond. and limiting redn. and oxidn. potentials in various
solvents for **electrolyte** for elec. double-layer
capacitors)
- IT 429-07-2, Tetraethylammonium hexafluorophosphate(1-) 2567-83-1,
Tetraethylammonium perchlorate 35895-69-3, Tetraethylammonium
trifluoromethanesulfonate
(elec. cond. in various solvents and limiting redn. and oxidn.
potentials of propylene **carbonate** contg.)
- IT 3109-63-5, Tetrabutylammonium hexafluorophosphate(1-)
(elec. cond. in various solvents for. org. **electrolyte**
for double-layer capacitor)
- IT 338-38-5, Tetrapropylammonium tetrafluoroborate(1-) 429-42-5,
Tetrabutylammonium tetrafluoroborate(1-) 558-32-7,
Tetramethylammonium hexafluorophosphate(1-) 1923-70-2,
Tetrabutylammonium perchlorate **7791-03-9**, Lithium
perchlorate 12110-21-3, Tetrapropylammonium hexafluorophosphate(1-
) **14283-07-9**, Lithium tetrafluoroborate(1-)
21324-40-3, Lithium hexafluorophosphate(1-) 25628-09-5,
Tetramethylammonium trifluoromethanesulfonate 33454-82-9, Lithium
trifluoromethanesulfonate 35895-70-6, Tetrabutylammonium
trifluoromethanesulfonate 35925-48-5, Tetrapropylammonium
trifluoromethanesulfonate
(elec. cond. in various solvents for. org. **electrolyte**
for double-layer capacitors)
- IT 79-24-3, Nitroethane 107-12-0, Propionitrile **110-67-8**,

3-Methoxypropionitrile 111-69-3, Adiponitrile 512-56-1,
Trimethyl phosphate 544-13-8, Glutaronitrile 1738-36-9,
Methoxyacetonitrile 4437-85-8, Butylene **carbonate**
(phys. properties and elec. cond. and limiting redn. and oxidn.
potentials in tetraethylammonium tetrafluoroborate-contg.)

L49 ANSWER 7 OF 7 HCA COPYRIGHT 2007 ACS on STN

110:176598 Research of new solvents for lithium **batteries**. II.

Behavior of aliphatic nitriles substituted by electron donating groups. Guibert, Sylvie; Cariou, Michel; Simonet, Jacques (Lab. Electrochim., Univ. Rennes I, Rennes, 35042, Fr.). Bulletin de la Societe Chimique de France (6), 924-9 (French) **1988**.

CODEN: BSCFAS. ISSN: 0037-8968.

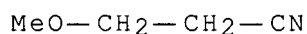
AB Methoxyacetonitrile (I), methoxy-3-propionitrile, and cyano-1-pyrrolidine have low reactivity towards Li and a broad electrochem. stability window (>5.0 V), suitable for use as **electrolyte** solvents in Li **batteries**. The dimer of I is formed in basic conditions or in the presence of an alkali metal and can be oxidized electrochem. At potentials more cathodic than the equil. potential of the Li/Li⁺ couple, I is electrochem. unstable, but the formation of the dimer can be reversed by controlling the pH of the medium.

IT **110-67-8**, Methoxy-3-propionitrile

(chem. and electrochem. stability of, for lithium **battery electrolyte** use)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

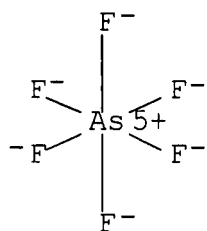


IT **29935-35-1**, Lithium hexafluoroarsenate (LiAsF₆)

(**electrolytes** contg., aliph. nitrile solvents for, stability of)

RN 29935-35-1 HCA

CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li⁺

- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 28, 72
- ST methoxyacetonitrile stability **electrolyte** lithium
battery; cyanopyrrolidine stability **electrolyte**
 lithium **battery**; methoxypropionitrile stability
electrolyte lithium **battery**
- IT **Batteries**, secondary
 (lithium, **electrolytes** for, aliph. nitrile solvents
 for, stability of)
- IT 110-67-8, Methoxy-3-propionitrile 1530-88-7,
 Cyano-1-pyrrolidine 1738-36-9, Methoxyacetonitrile
 (chem. and electrochem. stability of, for lithium **battery**
electrolyte use)
- IT 29935-35-1, Lithium hexafluoroarsenate (LiAsF₆)
 (**electrolytes** contg., aliph. nitrile solvents for,
 stability of)
- IT 65857-42-3P
 (formation and electrochem. oxidn. of, from methoxyacetonitrile,
electrolyte solvent use in relation to)
- IT 7439-93-2, Lithium, reactions
 (reaction of, with aliph. nitrile solvents, **battery**
electrolyte use in relation to)

=> D L50 1-11 CBIB ABS HITSTR HITIND

L50 ANSWER 1 OF 11 HCA COPYRIGHT 2007 ACS on STN
 139:373188 **Electrolytic** solutions with high specific
 electroconductivity for double-layer electric capacitors.
 Kobayashi, Yukiya; Seike, Hideo; Takamuku, Yoshinori (Sanyo Chemical
 Industries, Ltd., Japan; Matsushita Electric Industrial Co., Ltd.).
 Jpn. Kokai Tokkyo Koho JP 2003324039 A 20031114, 8 pp.
 (Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-48795 20030226.

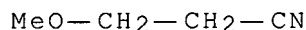
PRIORITY: JP 2002-50174 20020226.

AB The **electrolytic** solns. comprise (A) **electrolytes** contg. amidinium cations $R_2N^+C(R_1):NR_2$ or $[(R_4N)_2CR_3]^+$ [$R_1, R_3 =$ (substituted) C1-20 hydrocarbyl, H; $R_2, R_4 =$ (substituted) C1-10 hydrocarbyl; R_1 and R_2 or R_3 and R_4 may link together to form a heterocyclic ring with N] and anions and (B) nonaq. solvents with viscosity at 25° 0.1-1.3 mPa-s. The double-layer elec. capacitors have polarizable electrodes impregnated with the **electrolytic** solns., wherein cathodes or anodes contain carbonaceous materials as main components. The double-layer elec. capacitors show low equiv. series resistance.

IT **110-67-8, 3-Methoxypropionitrile**
(**electrolyte** solvent; **electrolytic** solns.
contg. amidinium cations with high specific electrocond. for
double-layer elec. capacitors)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IC ICM H01G009-038

ICS H01G009-035; H01G009-058; H01G009-14

CC 76-10 (Electric Phenomena)

ST **electrolyte** double layer elec capacitor amidinium cation

IT Capacitors
(double layer; **electrolytic** solns. contg. amidinium
cations with high specific electrocond. for double-layer elec.
capacitors)

IT Carbonaceous materials (technological products)
(electrodes; **electrolytic** solns. contg. amidinium
cations with high specific electrocond. for double-layer elec.
capacitors)

IT **Electrolytes**
Electrolytic capacitors
(**electrolytic** solns. contg. amidinium cations with high
specific electrocond. for double-layer elec. capacitors)

IT 7440-44-0, Activated carbon, uses
(activated, electrode; **electrolytic** solns. contg.
amidinium cations with high specific electrocond. for
double-layer elec. capacitors)

IT 68-12-2, N,N-Dimethylformamide, uses 75-05-8, Acetonitrile, uses
75-52-5, Nitromethane, uses 79-24-3, Nitroethane 96-49-1,
Ethylene **carbonate** 107-12-0, Propionitrile 108-32-7,
Propylene **carbonate** 109-74-0, Butyronitrile
110-67-8, 3-Methoxypropionitrile 126-33-0, Sulfolan

127-19-5, N,N-Dimethylacetamide 1738-36-9, Methoxyacetonitrile
(**electrolyte** solvent; **electrolytic** solns.

contg. amidinium cations with high specific electrocond. for
double-layer elec. capacitors)

IT 137581-28-3, 1,2,3-Trimethyl-1,4,5,6-tetrahydropyrimidinium
hexafluorophosphate 143314-16-3, 1-Ethyl-3-methylimidazolium
tetrafluoroborate 620944-22-1, 1,2,3-Trimethylimidazolium
hexafluorophosphate

(**electrolyte**; **electrolytic** solns. contg.
amidinium cations with high specific electrocond. for
double-layer elec. capacitors)

L50 ANSWER 2 OF 11 HCA COPYRIGHT 2007 ACS on STN

139:269341 **Electrolyte** solution for use in capacitors,
electrochemical cells, and lithium ion

batteries. Schwake, Andree (Epcos AG, Germany). PCT Int.

Appl. WO 2003081620 A1 **20031002**, 19 pp. DESIGNATED

STATES: W: CN, JP, RU, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR,
GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (German). CODEN: PIXXD2.

APPLICATION: WO 2003-DE815 20030313. PRIORITY: DE 2002-10212609
20020321.

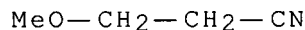
AB The invention relates to an **electrolyte** soln. for **electrochem. cells**
with a high b.p. > 86° at 1 bar and a high degree of cond. > 40 mS/cm
at 25°. The soln. contains MeCN as the 1st solvent, (component A),
in a proportion of 40-90% of the av. wt. of the solvent, in addn. to
≥1 addnl. electrochem. stable solvent with a b.p. > 120° at 1 bar, a
dielec. const. > 10 at 25° and a viscosity < 6 mPa at 25° and addnl.
≥1 support **electrolyte** as component C. Inventive **electrolyte** solns.
of this type have a high degree of cond., which is comparable to
electrolyte solns. that use MeCN as the sole solvent, while at the
same time exhibiting an increased b.p. as a result of component B.

IT **110-67-8**

(**electrolytic** soln. contg.; **electrolyte** soln.
for use in capacitors, **electrochem. cells**,
and lithium ion **batteries**)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IC ICM H01G009-038

ICS H01M010-40

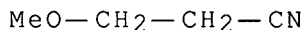
CC 76-10 (Electric Phenomena)

Section cross-reference(s): 52, 72

- ST **electrolytic** soln capacitor **electrochem**
cell lithium ion **battery**
- IT Capacitors
(double layer; **electrolyte** soln. for use in capacitors,
electrochem. cells, and lithium ion
batteries)
- IT **Electrochemical cells**
Electrolytic capacitors
Electrolytic solutions
(**electrolyte** soln. for use in capacitors,
electrochem. cells, and lithium ion
batteries)
- IT Primary **batteries**
Secondary **batteries**
(lithium; **electrolyte** soln. for use in capacitors,
electrochem. cells, and lithium ion
batteries)
- IT 67-68-5, Dimethylsulfoxide, uses 68-12-2, Dimethylformamide, uses
80-73-9, N,N-Dimethylimidazolidinone 96-48-0, γ -
Butyrolactone 96-49-1, Ethylene **carbonate** 105-58-8,
Diethyl **carbonate** 108-29-2, γ -Valerolactone
108-32-7, Propylene **carbonate** 110-61-2, Succinonitrile
110-67-8 126-33-0, Sulfolane 127-19-5, Dimethylacetamide
512-56-1, Trimethyl phosphate 544-13-8, Glutaronitrile 623-53-0,
Ethylmethyl **carbonate** 661-36-9, Tetramethylammonium
tetrafluoroborate 872-50-4, uses 872-93-5, 3-Methylsulfolane
4437-85-8, Butylene **carbonate** 19836-78-3,
3-Methyl-2-oxazolidinone
(**electrolytic** soln. contg.; **electrolyte** soln.
for use in capacitors, **electrochem. cells**,
and lithium ion **batteries**)
- L50 ANSWER 3 OF 11 HCA COPYRIGHT 2007 ACS on STN
- 138:139978 Effect of the cell structure elements on performance of
dye-sensitized solar cell. Han, Liyuan; Yamanaka, Ryohsuke; Obata,
Takatsugu (Technical Main Dept., Sharp Co., Ltd., Japan). Shapu
Giho, 83, 49-53 (Japanese) **2002**. CODEN: STEJD9. ISSN:
0285-0362. Publisher: Shapu K.K. Gijutsu Honbu.
- AB A TiO₂ porous light electrode, absorption of a dye and compn. of
electrolyte were investigated for the improvement in energy
conversion efficiency of the dye-sensitized solar cell. It is found
that increase in the porosity of TiO₂ porous light electrode causes
increase in the efficiency because more dye is absorbed on the
electrode. Dye uptake increases with absorption temp., when the
temp. is over 90°, however, short circuit current (J_{sc}) decreases
because of dye aggregation. It is also found that high J_{sc} can be
obtained by increasing the ionic cond. of **electrolyte**. Finally, the

efficiency of 8% was obtained. It is necessary to develop a new dye with broad absorbance in order to obtain the efficiency as high as silicon solar cell.

IT **110-67-8**, 3-Methoxypropionitrile
(effect of cell structure elements on performance of
dye-sensitized solar cell)
RN 110-67-8 HCA
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76

IT 75-05-8, Acetonitrile, uses 96-49-1, Ethylene **carbonate**
110-67-8, 3-Methoxypropionitrile 631-40-3,
Tetrapropylammonium iodide 3978-81-2, 4-tert-Butylpyridine
7553-56-2, Iodine, uses 10377-51-2, Lithium iodide (LiI)
13463-67-7, Titania, uses 19836-78-3, 3-Methyl-2-oxazolidinone
218151-78-1, 1,2-Dimethyl-3-propylimidazolium iodide
(effect of cell structure elements on performance of
dye-sensitized solar cell)

L50 ANSWER 4 OF 11 HCA COPYRIGHT 2007 ACS on STN

138:82077 Flame-retardant **electrolyte** solution for
electrochemical double-layer capacitors. Schwake, Andree (Epcos AG,
Germany). PCT Int. Appl. WO 2003003393 A1 **20030109**, 29
pp. DESIGNATED STATES: W: AU, BR, CA, CN, CZ, HU, IN, JP, KR, MX,
RU, UA, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT,
LU, MC, NL, PT, SE, TR. (German). CODEN: PIXXD2. APPLICATION: WO
2002-DE1844 20020522. PRIORITY: DE 2001-10128581 20010613.

AB The invention relates to flame-retardant **electrolyte** solns. with
flash points >76°. The solns. contain ≥1 support **electrolyte** which
is dissolved in a solvent mixt.. consisting of ≥1 highly polar
component and ≥1 flame-retardant, low-viscosity carbamate component.
The flame-retardant **electrolyte** solns. are indicated for use in
electrochem. capacitors with conductivities of > 20 mS/cm at 25°.

IT **110-67-8**, 3-Methoxypropionitrile
(capacitor **electrolyte** contg.; flame-retardant
electrolyte soln. for electrochem. double-layer
capacitors)
RN 110-67-8 HCA
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH₂—CH₂—CN

IC ICM H01G009-00
ICS H01G009-02; H01M010-40
CC 76-10 (Electric Phenomena)
Section cross-reference(s): 72
ST electrochem double layer capacitor flame retardant
electrolyte
IT Lactones
Nitriles, uses
Phosphonium compounds
Pyridinium compounds
Quaternary ammonium compounds, uses
(capacitor **electrolyte** contg.; flame-retardant
electrolyte soln. for electrochem. double-layer
capacitors)
IT Felts
Paper
Textiles
(capacitor separator; flame-retardant **electrolyte** soln.
for electrochem. double-layer capacitors)
IT Glass fibers, uses
Polymers, uses
(capacitor separator; flame-retardant **electrolyte** soln.
for electrochem. double-layer capacitors)
IT Capacitors
(double layer; flame-retardant **electrolyte** soln. for
electrochem. double-layer capacitors)
IT Capacitor electrodes
Electrolytic capacitors
Electrolytic solutions
Fire-resistant materials
(flame-retardant **electrolyte** soln. for electrochem.
double-layer capacitors)
IT Onium compounds
(imidazolium compds., capacitor **electrolyte** contg.;
flame-retardant **electrolyte** soln. for electrochem.
double-layer capacitors)
IT Onium compounds
(morpholinium compds., capacitor **electrolyte** contg.;
flame-retardant **electrolyte** soln. for electrochem.
double-layer capacitors)
IT Onium compounds
(pyrrolidinium compds., capacitor **electrolyte** contg.;

flame-retardant **electrolyte** soln. for electrochem.
double-layer capacitors)

- IT 75-05-8, Acetonitrile, uses 96-48-0, γ -Butyrolactone
96-49-1, Ethylene **carbonate** 108-29-2,
 γ -Valerolactone 108-32-7, Propylene **carbonate**
110-61-2, Succinonitrile **110-67-8**, 3-Methoxypropionitrile
407-43-2, Carbamic acid, dimethyl-, 2,2,2-trifluoroethyl ester
429-06-1, Tetraethylammonium tetrafluoroborate 544-13-8,
Glutaronitrile 687-48-9, Ethyl-N,N-dimethylcarbamate 7541-16-4,
Methyl-N,N-dimethylcarbamate 69444-47-9, Methyltriethylammonium
tetrafluoroborate
(capacitor **electrolyte** contg.; flame-retardant
electrolyte soln. for electrochem. double-layer
capacitors)
- IT 7429-90-5, Aluminum, uses
(capacitor separator; flame-retardant **electrolyte** soln.
for electrochem. double-layer capacitors)

L50 ANSWER 5 OF 11 HCA COPYRIGHT 2007 ACS on STN

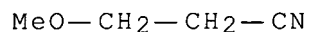
138:46203 Rest potential of activated carbon electrode in various
organic **electrolytes**. Takeda, Masayuki (Sci. Tech. Res.
Cent., Mitsubishi Chem. Corp., Japan). Denkai Chikudenki Hyoron,
53(1), 135-137 (Japanese) **2002**. CODEN: DCHYAK. ISSN:
0286-5629. Publisher: Denkai Chikudenki Kenkyukai.

AB The rest potential of the activated C electrode, which were measured
in 14 kinds of org. solvents, such as **carbonate**, nitriles, lactones,
DMF, DMSO, etc., ranged from -0.29 V to -0.16 V vs. EFc/Fc, that
could not be correlate with the structure of solvent mol. The
relation between the rest potential and the donor no. or the acceptor
nos. of these solvents are discussed.

IT **110-67-8**, 3-Methoxypropionitrile
(rest potential of activated carbon electrode in)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



CC 72-2 (Electrochemistry)

ST rest potential carbon electrode org **electrolyte**; solvent
effect rest potential carbon electrode

IT Electron acceptors

Electron donors

(aprotic solvents; rest potential of activated carbon electrode
in various org. **electrolytes**)

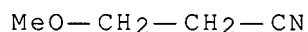
- IT Electrodes
(rest potential of activated carbon electrode in various org.
electrolytes)
- IT Electric potential
(rest; of activated carbon electrode in various org.
electrolytes)
- IT 67-68-5, Dimethyl sulfoxide, uses 68-12-2, DMF, uses 75-05-8,
Acetonitrile, uses 80-73-9, N,N-Dimethylimidazolidinone 96-48-0,
 γ -Butyrolactone 108-29-2, γ -Valerolactone 108-32-7,
Propylene **carbonate 110-67-8**,
3-Methoxypropionitrile 126-33-0, Sulfolane 127-19-5,
N,N-Dimethylacetamide 512-56-1, Trimethyl phosphate 872-50-4,
uses 1738-36-9, Methoxyacetonitrile 59581-66-7
(rest potential of activated carbon electrode in)
- IT 7440-44-0, Carbon, uses
(rest potential of activated carbon electrode in various org.
electrolytes)

L50 ANSWER 6 OF 11 HCA COPYRIGHT 2007 ACS on STN

136:378574 Method of manufacturing a electric double layer
supercapacitor with electrode of carbon particle layer. Maletin,
Yurii A.; Strizhakova, Natalie G.; Izotov, Vladimiz Y.; Mironova,
Antonia A.; Kozachkov, Sergey G.; Danilin, Valery A.; Podmogilny,
Sergey N.; Arulepp, Mati; Aleksandrovna, Kukusjkina Julia;
Efimovitj, Kravtjik Aleksandr; Vasilevitj, Sokolov Vasilij; Perkson,
Anti; Leis, Jaan; Zheng, Jie; Konstantinovich, Gordeev Sergey;
Kolotilova, Julia Y.; Cederstroem, Jan; Wallace, Clarence L.
(Ultratec Ltd., UK). PCT Int. Appl. WO 2002039468 A2
20020516, 48 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT,
AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK,
DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS,
JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,
MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL,
TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ,
MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK,
ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN,
TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO
2001-EP12837 20011106. PRIORITY: US 2000-247593P 20001109; RU
2001-117550 20010615.

AB The present invention relates to an elec. double layer capacitor
including ≥ 1 pair of polarizable electrodes connected to current
collectors, a separator made of ion-permeable but electron-insulating
material interposed between the electrodes in each pair of
electrodes, and a liq. **electrolyte**. According to the invention the
electrodes include a layer of C particles having a narrow
distribution of nanopores therein, the pore sizes of the nanopores
being adapted to fit the ion sizes of the **electrolyte**.

IT 110-67-8, 3-Methoxypropionitrile
(aprotic polar solvent; elec. double layer supercapacitor with
electrode of carbon particle layer and a method of manufg. such a
supercapacitor)
RN 110-67-8 HCA
CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IC ICM H01G009-00
CC 76-10 (Electric Phenomena)
Section cross-reference(s): 35
IT Binders
Capacitor electrodes
Electrolytes
Filaments
Halogenation
Thermal decomposition
(elec. double layer supercapacitor with electrode of carbon
particle layer and a method of manufg. such a supercapacitor)
IT 68-12-2, Dimethylformamide, uses 75-05-8, Acetonitrile, uses
78-93-3, Methyl ethyl ketone, uses 96-48-0, γ -Butyrolactone
96-49-1, Ethylene **carbonate** 100-47-0, Benzonitrile, uses
107-12-0, Propionitrile 108-29-2, γ -Valerolactone
108-32-7, Propylene **carbonate** 109-74-0, Butyronitrile
109-99-9, Tetrahydrofuran, uses 110-67-8,
3-Methoxypropionitrile 110-71-4 872-50-4, N-Methyl pyrrolidone,
uses
(aprotic polar solvent; elec. double layer supercapacitor with
electrode of carbon particle layer and a method of manufg. such a
supercapacitor)
IT 14874-70-5D, Tetrafluoroborate, N,N-dialkyl-1,4-
diazabicyclo[2.2.2]octanediium salts 14874-70-5D,
Tetrafluoroborate, tetraalkylammonium salts 14874-70-5D,
Tetrafluoroborate, tetrakis(dialkylamino) phosphonium salts
16919-18-9D, Hexafluorophosphate, N,N-dialkyl-1,4-
diazabicyclo[2.2.2]octanediium salts 16919-18-9D,
Hexafluorophosphate, tetraalkylammonium salts 16919-18-9D,
Hexafluorophosphate, tetrakis(dialkylamino) phosphonium salts
(liq. **electrolyte** made of; elec. double layer
supercapacitor with electrode of carbon particle layer and a
method of manufg. such a supercapacitor)
IT 110320-40-6, Polypropylene **carbonate**
(secondary binder; elec. double layer supercapacitor with

electrode of carbon particle layer and a method of manufg. such a supercapacitor)

L50 ANSWER 7 OF 11 HCA COPYRIGHT 2007 ACS on STN

136:88337 Dye-sensitized photoelectric transducer. Yanagida, Shozo; Ikeda, Masaaki; Shigaki, Koichiro; Inoue, Teruhisa (Nippon Kayaku Kabushiki Kaisha, Japan). PCT Int. Appl. WO 2002001667 A1 **20020103**, 25 pp. DESIGNATED STATES: W: CA, CN, JP, KR, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2001-JP5452 20010626. PRIORITY: JP 2000-195464 20000629.

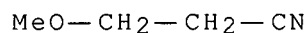
AB The invention aims at developing an expensive photoelec. transducer exhibiting a high conversion efficiency. The solar **battery**, using the photoelec. transducer, comprises a thin film made of semiconductor fine particles sensitized by having a specific azo dye supported thereon. The photoelec. transducer contains arom. group to which at least one group, selected from carboxyl, hydroxyl, phosphoric acid, phosphoric ester, or mercapto, is bonded either directly or indirectly. Another arom. group is substituted by, at least one, electron-donating group.

IT **110-67-8**

(dye-sensitized photoelec. transducer for solar **battery**)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IC ICM H01M014-00

ICS H01L031-04

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76, 77

IT Dyes

Photoelectric devices

Semiconductor materials

Solar cells

(dye-sensitized photoelec. transducer for solar **battery**)

IT Transducers

(photoelec.; dye-sensitized photoelec. transducer for solar **battery**)

IT 101-51-9 3566-94-7 6434-57-7 7440-06-4, Platinum, uses

13463-67-7, Titania, uses 14847-54-2 57741-47-6 61212-66-6

85720-86-1 93935-92-3 141460-19-7 386206-87-7 386206-88-8

386206-89-9	386206-90-2	386206-91-3	386206-92-4	386206-93-5
386206-94-6	386206-95-7	386206-97-9	386207-00-7	386207-03-0
386207-05-2	386207-06-3	386207-07-4	386207-08-5	386207-09-6
386207-10-9	386207-11-0	386207-12-1	386207-13-2	386207-14-3
386207-15-4	386207-16-5	386207-17-6	386207-18-7	386207-19-8
386207-20-1	386207-21-2	386207-22-3	386207-23-4	386213-80-5

(dye-sensitized photoelec. transducer for solar **battery**

)

IT 96-49-1, Ethylene **carbonate** 7550-45-0, Titanium
tetrachloride, uses 10377-51-2, Lithium iodide
(dye-sensitized photoelec. transducer for solar **battery**

)

IT 75-05-8, Acetonitrile, reactions **110-67-8** 631-40-3,
Tetra(propylammonium) iodide 7553-56-2, Iodine, reactions
118676-08-7 218151-78-1

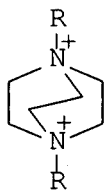
(dye-sensitized photoelec. transducer for solar **battery**

)

L50 ANSWER 8 OF 11 HCA COPYRIGHT 2007 ACS on STN

132:8268 Novel **electrolytes** for electrochemical double layer
capacitors. Maletin, Yuri; Strizhakova, Natalie; Izotov, Vladimir;
Mironova, Antonia; Danilin, Valery; Kozachov, Sergey (Superfarad
Ltd., UK). PCT Int. Appl. WO 9960587 A1 **19991125**, 22 pp.
DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY,
CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU,
ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV,
MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK,
SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG,
KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE,
DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE,
SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-EP3412
19990518. PRIORITY: UA 1998-52573 19980518.

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(Y⁻)₂

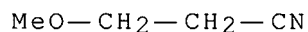
I

AB Novel org. **electrolytes** comprising tetrafluoroborates and hexafluorophosphates of doubly charged cations of N,N-dialkyl-1,4-diazabicyclo[2.2.2]octanediium (DADACO) are disclosed, which have the general formula I, where R = C1-C4 alkyl and Y- = BF4- or PF6-. The compds. are dissolved in an aprotic polar solvent or a mixt. of such solvents to form **electrolytes** for electrochem. double layer capacitors.

IT **110-67-8**, 3-Methoxypropionitrile
(solvent; **electrolytes** for electrochem. double layer capacitors contg.)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IC ICM H01G009-038

CC 76-10 (Electric Phenomena)
Section cross-reference(s): 72

ST **electrolyte** electrochem double layer capacitor;
alkyldiazabicyclooctanediium tetrafluoroborate hexafluorophosphate
electrolyte electrochem double layer capacitor; fluoroborate
dialkyldiazabicyclooctanediium **electrolyte** electrochem
double layer capacitor; fluorophosphate
dialkyldiazabicyclooctanediium **electrolyte** electrochem
double layer capacitor; polar solvent **electrolyte**
electrochem double layer capacitor

IT Capacitors
(double layer; **electrolytes** for electrochem. double layer capacitors)

IT **Electrolytes**
(**electrolytes** for electrochem. double layer capacitors)

IT Polar solvents
(**electrolytes** for electrochem. double layer capacitors contg.)

IT 429-06-1, Tetraethylammonium tetrafluoroborate 69282-14-0
120099-85-6 120099-88-9
(**electrolytes** for electrochem. double layer capacitors contg.)

IT 68-12-2, N,N-Dimethylformamide, uses 75-05-8, Acetonitrile, uses
78-93-3, 2-Butanone, uses 96-48-0, γ -Butyrolactone
96-49-1, Ethylene **carbonate** 107-12-0, Propionitrile
108-29-2, γ -Valerolactone 108-32-7, Propylene
carbonate 109-99-9, Tetrahydrofuran, uses **110-67-8**

, 3-Methoxypropionitrile 110-71-4 872-50-4, 1-Methyl-2-pyrrolidinone, uses
(solvent; **electrolytes** for electrochem. double layer capacitors contg.)

L50 ANSWER 9 OF 11 HCA COPYRIGHT 2007 ACS on STN

125:345282 Nonaqueous **electrolytic** solution with high electric conductivity for electrochemical capacitor. Ue, Makoto; Takeda, Masayuki; Takehara, Masahiro (Mitsubishi Chemical Corp., Japan). Jpn. Kokai Tokkyo Koho JP 08250378 A **19960927** Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-48743 19950308.

AB The soln. contains a quaternary ammonium salt R1R2R3N+R4.Et3B-Me (R1-4 = C1-4 alkyl) and a bipolar aprotic solvent. The soln. showed improved elec. cond.

IT **110-67-8**, 3-Methoxypropionitrile
(solvent; nonaq. **electrolytic** capacitor soln. contg. quaternary ammonium salt with high elec. cond.)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)

MeO—CH₂—CH₂—CN

IC ICM H01G009-038

CC 76-10 (Electric Phenomena)

ST **electrolytic** capacitor soln quaternary ammonium salt;
bipolar aprotic solvent **electrolytic** capacitor soln;
borate ammonium **electrolytic** capacitor nonaq soln

IT Quaternary ammonium compounds, uses
(nonaq. **electrolytic** capacitor soln. contg. quaternary ammonium salt with high elec. cond.)

IT Electric capacitors
(**electrolytic**, nonaq. **electrolytic** capacitor soln. contg. quaternary ammonium salt with high elec. cond.)

IT 183858-41-5 183858-43-7
(nonaq. **electrolytic** capacitor soln. contg. quaternary ammonium salt with high elec. cond.)

IT 75-05-8, Acetonitrile, uses 96-48-0, γ -Butyrolactone
96-49-1, Ethylene **carbonate** 105-58-8, Diethyl
carbonate 108-29-2, γ -Valerolactone 108-32-7,
Propylene **carbonate** **110-67-8**,
3-Methoxypropionitrile 126-33-0, Sulfolane 512-56-1, Trimethyl
phosphate 542-28-9, δ -Valerolactone 616-38-6 623-53-0,
Ethyl methyl **carbonate** 872-93-5, 3-Methylsulfolane

4437-69-8, Isobutylene **carbonate** 4437-85-8, Butylene
carbonate

(solvent; nonaq. **electrolytic** capacitor soln. contg.
quaternary ammonium salt with high elec. cond.)

L50 ANSWER 10 OF 11 HCA COPYRIGHT 2007 ACS on STN

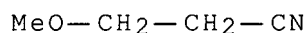
107:248434 **Electrolyte** solution of quaternary ammonium salts
for **electrolytic** capacitors. Mori, Shoichiro; Ue, Makoto
(Mitsubishi Petrochemical Co., Ltd., Japan). Eur. Pat. Appl. EP
227433 A2 **19870701**, 13 pp. DESIGNATED STATES: R: DE, FR,
GB, NL. (English). CODEN: EPXXDW. APPLICATION: EP 1986-309882
19861217. PRIORITY: JP 1985-286980 19851220; JP 1985-286982
19851220; JP 1986-98673 19860428.

AB An **electrolyte** soln. for use in an **electrolytic** capacitor comprises
as a solute ≥ 1 quaternary NH_4^+ salt of a carboxylic acid which is
selected from 5-40 wt.% of (a) maleic acid and/or citraconic acid or
(b) 7-30 wt.% of an arom. carboxylic acid or (c) 1-40 wt.% of a
branched-chain aliph. dicarboxylic acid. In (c) the salt has 11-30 C
atoms. The **electrolyte** soln. has high elec. cond. when used, e.g.,
with Al foil electrodes. The solvent is aprotic, preferably an amide
or lactone.

IT **110-67-8**
(**electrolytes** contg., for capacitors)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



IC ICM H01G009-02

CC 76-10 (Electric Phenomena)

ST quaternary ammonium salt **electrolyte** capacitor; maleate
electrolyte capacitor; citraconate **electrolyte**
capacitor; arom carboxylate capacitor **electrolyte**; aliph
dicarboxylate capacitor **electrolyte**

IT Quaternary ammonium compounds, uses and miscellaneous
(**electrolytes** contg., for capacitors)

IT Amides, uses and miscellaneous
Carboxylic acids, uses and miscellaneous
Lactones

(aliph., **electrolytes** contg., for capacitors)

IT Carboxylic acids, uses and miscellaneous
(aryl, **electrolytes** contg., for capacitors)

IT Electric capacitors
(**electrolytic**, quaternary ammonium salts as

electrolytes for)

IT 68-12-2, N,N-Dimethylformamide, uses and miscellaneous 96-48-0,
γ-Butyrolactone 107-21-1, uses and miscellaneous 108-32-7,
Propylene **carbonate 110-67-8** 512-56-1,
Trimethyl phosphate 3774-74-1, Tetraethylammonium salicylate
3774-75-2, Tetraethylammonium γ-resorcyate 16909-22-1,
Tetraethylammonium benzoate 68570-55-8, Tetraethylammonium
p-nitrobenzoate 68874-26-0 111754-37-1 111754-38-2
111754-39-3 111754-40-6 111754-42-8 111754-43-9 111754-45-1
111754-46-2 111754-47-3 111754-48-4 111754-50-8 111754-52-0
111754-54-2 111778-54-2

(**electrolytes** contg., for capacitors)

L50 ANSWER 11 OF 11 HCA COPYRIGHT 2007 ACS on STN

102:52900 Heterogeneous redox catalysis with titanium/chromium(III)
oxide + titanium dioxide composite anodes. Beck, F.; Schulz, H. (FB
6-Elektrochem., Univ. GH-Duisburg, Duisburg, D-4100/1, Fed. Rep.
Ger.). Electrochimica Acta, 29(11), 1569-79 (English) **1984**
. CODEN: ELCAAV. ISSN: 0013-4686.

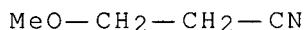
AB [Ti/Cr2O3 + TiO2] composite electrodes were fabricated by a ceramic
method, starting with activation solns. contg. CrCl3.6H2O and
Ti(Obu)4 with subsequent firing in air at 650°. Surface α-Cr2O3
could be anodically stripped in 1M H2SO4 as H2CrO4 at UH ≈ 1.8 V.
Conversion of Cr2O3 decreased with increasing thickness of porous
Cr2O3 layer. The electrodes were used for the anodic oxidn. of
aliph. alcs. and ethers in 1M H2SO4. Validity of model of
heterogeneous redox catalysis is proved by the following results:
large amplification of anodic stripping curve in the presence of
oxidizable starting materials, coincidence of anodic current voltage
curve with basic (stripping) curve at low c.ds., and reaction
limitation at high c.ds. Life time (τ) of electrodes, measured
galvanostatically, is detd. by dissoln. of CrO3, present at the
surface of the polarized electrode. Substantial improvement of τ by
modification of the solid (SbOx doping) or the **electrolyte**
(cosolvents) was demonstrated. Turn over factors of the surface
fixed redox system in excess of 1000 were realized.

IT **110-67-8**

(oxidn. of, electrochem., on titanium composite electrode with
chromium oxide in sulfuric acid)

RN 110-67-8 HCA

CN Propanenitrile, 3-methoxy- (CA INDEX NAME)



CC 72-2 (Electrochemistry)
Section cross-reference(s): 67
IT Alcohols, reactions
 Ethers, reactions
 (aliph., oxidn. of, electrocatalytic, on titanium composites with
 chromium oxide and titanium oxide)
IT 64-17-5, reactions 67-56-1, reactions 67-63-0, reactions
71-23-8, reactions 109-99-9, reactions **110-67-8**
 (oxidn. of, electrochem., on titanium composite electrode with
 chromium oxide in sulfuric acid)

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